Prevalence of Learning Disabilities and the Relationship with Risk of Re-offending in Young Offenders.

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Abstract

Learning disabilities involve specific deficits in learning and performance in individuals often with average intellectual functioning. Whilst it is well known that these individuals suffer from the obvious academic deficits, what is becoming more apparent is the negative individual and social consequences of having a learning disability. There is a plethora of research that links learning disabilities to delinquent behaviour; however, apart from recognising that a relationship that exists, there is little known about the nature of the relationship. Within New Zealand there is limited research even on this relationship between delinquency and learning disabilities. The main purpose of this study was to investigate the prevalence of learning disabilities in incarcerated youth at two youth prison sites, and determine if the prevalence of learning disabilities and other comorbid disorders affects predicted rates of re-offending. Sixty youth (16-19 years) from Rimutaka and Christchurch Youth Prisons voluntarily participated in this study. Each participant's IQ was estimated and reading, mathematical and oral language learning disabilities measured using the Wechsler Individual Achievement Test-2nd Edition (WIAT-II). Prevalence of comordid conditions were measured using self-report, parental-report and observer-report questionnaires. The estimated likelihood of re-offending was measured using a structured interview, designed by the Department of Corrections completed by both the youth and parent. The prevalence rates of learning disabilities of youth offenders exceeded any found by international studies, with the majority of offenders having at least one disability. Given the small number of individuals without learning disabilities comparisons of learning disabled youth with non learning disabled youth were limited. It was found that over half of the sample had significant symptoms of ADHD, with inattentive type being the most prevalent. Overall there was almost a fifty percent chance that these youth would re-offend in the next twelve months, the presence of a learning disability did not appear to mediate this finding. Findings from the present study are indicative of a variety of lines of further research, including the use of a control group, intervention and prevention efforts.

1.0 Introduction

1.1 Overview of Learning Disabilities

Learning disabilities involve deficits in learning and performance in individuals who maintain general intellectual functioning but have difficulties in reading, mathematics, oral language and written expression. These disabilities are central to the individual, and presumed to be due to central nervous system dysfunction (Lyon, Fletcher, & Barnes, 2003). Since the formal recognition of learning disabilities 25 years ago, the role of learning disabilities in poor academic performance has been the focus of attention (Kavale & Forness, 1996); however, in recent years, the field has begun to recognise the impact of learning disabilities in other areas of functioning (Morrison & Cosden, 1997). The DSM-IV-TR (APA, 2000) identified a number of associated secondary features that occur in individuals with a learning disability. These features include demoralization, low self-esteem and deficits in social skills, with an increase in school dropout. These individuals may have more employment difficulties and social adjustment in adulthood. Furthermore, these individuals have higher rates of incarceration, and are more likely to re-offend than individuals without learning disabilities. There is some evidence that the secondary consequences of learning disabilities may be prevented by intensive academic interventions in both younger and older children (Lyon, et al., 2003).

The domain of learning disabilities is complex and highly correlated with deficits in other areas of functioning, such as behavioural problems, mood and anxiety and deviant behaviour. This introduction attempts to present a summary of research pertaining to the definition and measurement of learning disabilities prior to

examining the extent of the problem nationally and internationally. The many skill deficits that accompany a general learning disability will be explored before taking a closer look at specific learning disabilities. When other comorbidities are present with learning disabilities this further exacerbates the symptoms of learning disabilities, and creates a number of new difficulties for the individual, given this an overview of Attention Deficit Hyperactivity Disorder (ADHD) and other psychopathologies that regularly co-occur will be examined. Finally, the relationship between deviant behaviour and learning disabilities is considered, with specific attention paid to the impact of other comorbid behaviour.

1.2 Defining Learning Disabilities

There are many contentious issues within the domain of learning disabilities, one of the most important is the lack of a clear definition. Internationally there is a clear lack of definitional guidelines in regards to learning disabilities,(Chapman, 1992) and within New Zealand the term 'learning disabilities' has not been formally accepted by the education system (Chapman, St George, & Van Kraayenoord, 1984). Kavale & Forness (2000) argue that there is currently no precise description of learning disabilities, and that this results in difficulties with identification of disabilities. The lack of a clear definition and diagnostic criteria ensures that many individuals with learning difficulties fail to get identified, and therefore do not get assistance necessary to improve their academic performance. It also makes interpretation of the vast amount of literature available extremely complex, with researchers using different diagnostic criteria, making comparisons difficult. Furthermore, many researchers use criteria differently to the clinical recommendations of the APA in the DSM-IV, which

limits the clinical utility of such research. Given the importance of a definition, this will be discussed prior to discussion about measuring learning disabilities.

Kavale and Forness (2000)suggest "*when a definition is vague, the resulting lack of precision creates amorphous boundary conditions*" (2000 p.240). Because no definition has been clearly established this means that we do not have a good understanding of learning disabilities, and we also do not have a rational reason as to why particular students develop learning disabilities yet others do not (Kavale & Forness, 2000).

One of the most prevalent and important (American Academy of Child and Adolescent Psychiatry (AACAP), 1998) definitions of learning disabilities is from the Individuals with Disabilities Education Act (IDEA):

> *"The term 'specific learning disability' means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in imperfect ability to listen, think, speak, read, write, spell or do mathematical calculations. The term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. Such term does not include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage".*
>
> (IDEA amendments of 1997; cited in Kavale & Forness, 2000 p.240)

While this definition is one of the most popular, it still fails to encapsulate the essence of learning disabilities. It further fails to actually describe the specific condition, and is rather generic in nature (Kavale & Forness, 2000). This generic approach is unsurprising given the heterogeneous nature of learning disabilities, as a comprehensive definition needs to encompass a variety of deficits and outcomes. Progress has been made in the domain of learning disabilities that has lead to a greater understanding of the causes, developmental course, treatment conditions and long-term outcomes of having a learning disability. Despite this little is still known on these important areas of functioning, and has not led to a precise definition of learning disabilities (Lyon, et al., 2003).

1.2.1 Diagnosing Learning Disorders

A basic assumption underlying learning disabilities is the failure of the student to acquire primary academic skills at levels expected for age, grade placement and level of intellectual functioning. It is argued that establishing the presence of a learning disability is a difficult task and a number of factors need to be considered: the child's age, other problems, sensory functioning, health history, educational history and cultural background (AACAP, 1998; Sattler, 2002). The literature is full of authors divided on their opinions of how to measure learning disabilities (e.g. Dombrowski, Kamphaus & Reynolds, 2004; Fletcher, Shaywitz, Shankweiler, Katz, Liberman, Stuebing, Francis, Fowler & Shaywitz, 1994; Siegel, 2003; Swanson, 1989). The argument generally takes the stand of advocating for a IQ-achievement discrepancy approach (Rutter & Yule, 1975) in diagnosis or a low achievement approach (Shaywitz, Fletcher, & Holahan, 1992; Siegel, 1989; Siegel, 2003). It is clear from reviewing the literature that there will not be a rapid conclusion to this debate.

1.2.2 IQ – Achievement Discrepancy Model

The most commonly diagnostic method used in the United States is discrepancy-based (Shaywitz, et al., 1992). In general, the discrepancy-based model involves the comparison of an individual's actual achievement and their measured potential, measured using an Intelligence Quotient (IQ) test (Siegel, 2003).The Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition – Text Revision (DSM-IV-TR) utilise this model in guiding professionals working in this area (APA, 2000). The DSM-IV-TR includes diagnostic criteria for Reading Disorder, Mathematics Disorder, Disorder of Written expression, and Learning Disorder Not Otherwise Specified. It is specified that a learning disorder is present when the individual's achievement on standardized tests in reading, mathematics, or written expression is substantially below that expected for age, schooling, and level of intelligence (APA, 2000). These problems must also impair the individual in some aspect of their life such as, academic achievement or activities of daily living. While two standard deviations between achievement and IQ is recommended, it is also noted that there are occasions that a smaller discrepancy is acceptable (e.g. associated disorder in cognitive processing, a comorbid mental disorder, individuals ethnic or cultural background). Whilst this is the traditional method of identifying learning disabilities, and is recommended by the APA (APA, 2000) many authors now argue for this method to be discarded (Siegel, 2003; Vellutino, 2000).

Research over the past 15 years has challenged the IQ-achievement discrepancy definition of learning disabilities (AACAP, 1998). Rutter and Yule were the first to investigate the relationship between IQ and reading achievement of children with

academic difficulties, they found that while IQ was normally distributed, reading achievement scores were largely negatively skewed (Fletcher, Francis, Shaywitz, Lyon, Foorman, Stuebing, & Shaywitz. 1998; Stage, Abbot, Jenkins, & Beringer 2003). While this is the basis for the most commonly used approach now, no other researchers have replicated Rutter and Yule's findings (Stage, et al., 2003), including researchers in New Zealand (Fletcher, et al., 1998).

There are a number of identified problems with the IQ-discrepancy approach. Firstly, it is suggested that this approach fails to account for regression toward the mean. This implies that children with above average IQs will have achievement scores that are lower than their IQ, and so a degree of discrepancy would be expected for this group. Further children with below average IQs may have achievement scores that are higher than their IQ scores, and thus be under-identified. While a regression approach would provide a solution for this problem such equations must be derived from large normal sample with similar characteristic with the same tests use. Given this, such an approach would be difficult to undertake (Shaywitz, et al., 1992).

Secondly, consensus on an appropriate cut-off score within the IQ-achievement discrepancy is lacking. This means that a decision as to who has a learning disability is open to considerable interpretation. For example within the USA, each state decides on the appropriate cut-off point (AACAP, 1998). Finally, there is no clear instruction or empirical research to suggest which measure of intelligence is appropriate. It is unclear if Full Scale IQ (FSIQ) should be used as the measurement from which achievement is compared or if Verbal IQ (VIQ) or Performance IQ (PIQ) are equally as appropriate (Siegel, 2003). Some authors even argue that the current use of the

Wechsler tests of intelligence is inappropriate as they are really only measures of achievement, in that they are a measure of past accomplishments that occurred in traditional school subjects (Kaufman, 1994). Others suggest that a more appropriate measure of intelligence involves measures of Planning, Attention, Simultaneous, and Successive (PASS) cognitive processing (See Naglieri & Reardon, 1993 for a review).

1.2.3 Low Achievement Method

While the APA advocate for the use of the IQ-achievement discrepancy approach, it is argued that learning disabilities can be defined solely on the basis of tests of achievement without considering IQ (Shaywitz, et al., 1992). The achievement model involves measuring achievement by means of standard tests and using a standard cut off mark to identify those with learning disabilities and those without learning disabilities. Achievement tests assess core academic achievement deficits with standardized and validated measures of these same constructs (e.g. Wechsler Individual Achievement Test-2nd Edition) such as mathematics, spelling and reading (Dombrowski, et al., 2004;Sattler, 2002). Researchers report using a variety of cut-off scores, on the low achievement model, but one standard deviation below the mean is generally considered to be indicative of a learning disability (Dombrowski, et al., 2004).

A number of researchers have investigated the utility of the IQ-achievement discrepancy over the low achievement model. Fletcher, et al., (1998) provides discussion of four influential studies (Fletcher et al., 1994; Foporman, Francis, Fletcher, & Lynn, 1996; Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996; Stanovitch & Siegel, 1994; as cited in Fletcher, et al., 1998). The research focused on

reading disabilities in both cross-sectional and longitudinal studies, using both the discrepancy approach and the low achievement approach to determine if the groups could be differentiated. All four studies found that both groups performed similarly on measures of reading skills and cognitive skills related to reading.

Shaywitz et al. (1992) examined the cognitive and behavioural characteristics in children with reading disabilities, using both the IQ-achievement discrepancy and low achievement criteria to define his sample. The results indicated that no matter what method was employed, the groups exhibited a number of similarities. In kindergarten youth performed similarly on measures such as dexterity, gross motor functioning, visual perception and language. During second and fifth grades, assessment of learning and behaviour was also similar, again suggesting that there is no merit in using the IQ-achievement discrepancy method.

It has been found there is no difference, in response to early intervention for beginning readers, between students who have a reading achievement score that is discrepant from their FSIQ and those that have low-IQ students whose reading is not discrepant from their IQ (Vellutino, Scanlon, & Lyon, 2000). Similar results were found in a group of older readers with reading difficulties (Francis, et al., 1996)). Furthermore (Stage, et al., 2003) investigated the outcome of reading intervention on youth identified as learning disabled using the discrepancy approach of Verbal IQ (VIQ) minus word reading in comparison to reading related language abilities and attention. They reported that VIQ language-related measures and attention contributed more to performance than did VIQ. Furthermore, the discrepancy approach did not predict response to reading intervention.

There is little evidence to advocate for the use of the IQ-achievement discrepancy, in fact many authors argue that this diagnostic criteria is actually doing harm. It is argued that the use of such criteria ensures that many children do not get identified as having difficulties until they are older, and begin to fail (Dombrowski, et al.2004; Lyon, et al., 2003). Evidence suggests that the IQ-achievement discrepancy approach is no more effective (in fact it may be less effective) in identifying youth with learning disabilities, and when the cost and time taken to administer and analyse intelligence tests is considered it appears to be sagacious to move away from this model. In light of the empirical support for the low achievement model the present research will adopt this approach. Moreover, the present research adheres to the recommendations by Lyon et al., that the identification of underachievement be based on performance on tasks which directly assess the skills required in the target academic domain (Sattler, 2002).

1.3 Epidemiology

1.3.1 Prevalence

Learning disabilities are now the dominant handicap of US school-age children (Katz & Slomka, 2000), with a prevalence rate between 2-10%, depending on criterion. The DSM-IV-TR indicates that approximately 5% of students in public schools are identified as having a learning disorder (APA, 2000). For many years New Zealand has been considered to have to high standards in educational ability (Throndike 1973; Purves, 1973; Guthrie, 1981; as cited in Wilkinson, 1998). The most recent reports state that New Zealand rated third overall in reading and mathematical literacy and sixth in scientific literacy in a Programme for International Student Assessment

(PISA) which compares achievement across 32 nations (Bracey, 2002; Ministry of Education, 2002). However, a number of New Zealand students have a low ability in reading, maths and scientific literacy levels (Ministry of Education, 2002). New Zealand schools have conservatively estimated the prevalence of learning disabilities of students to be approximately 7%, with estimates as high as 15% (Chapman, 1992). Preliminary data from a Christchurch sample of youth found that 19% of this population have a learning disability (8.5% diagnosed with a reading disability; 17% diagnosed with a maths disability) (Rucklidge, 2004). Learning disability has never been clearly defined within the New Zealand educational system, instead, any academic problems have been referred to as difficulties, with little effective remediation provided (Chapman, 1992). Given the negative outcomes for people with learning disabilities, and the benefits of effective treatment, this is concerning for New Zealand society. Furthermore, in research it is often wrongly assumed that individuals with learning disabilities are a homogeneous group. Consequently, all subtypes of disabilities (i.e., reading, maths, oral language) are grouped into a 'learning disabled category'. These categories of learning disabilities are different in terms of phenotypic descriptions and interventions. Furthermore, these categories are domain-specific, as such deficits in one domain i.e. maths, does not necessarily impact other domains i.e. reading. Given the heterogeneity within the domain of learning disorders all disorders cannot be grouped into the subsuming overarching category of learning disorders, each subtype should be identified as unique (Lyon, et al., 2003).

1.4 Specific Skill Deficits Associated with General Learning Disabilities

Learning disabilities include a number of specific and potentially debilitating symptoms that can be grouped into three major areas: neuropsychological deficits, academic deficits and social-emotional/adaptational deficits (Rourke, as cited in Roman, 1998). The majority of research reported in the literature relates to reading disabilities, with a variety of diagnostic criteria used. Therefore, it is difficult then to describe the specific cognitive, emotional and behavioural deficits that occur in individuals with other learning disorders (such as mathematics, written or oral). (Torgesen, 1989) suggests that there is apparent generalized performance deficits in children with learning disabilities, and that this ensures any deficits can be easily applied to disabilities other than reading; however, if information relates to other specific disabilities it will be noted.

1.4.1 Neuropsychological Deficits

Torgesen, (1989), in reporting findings from the Austin Invitational Research Symposium, suggest that a key assumption of learning disabilities is that individuals with this disorder have specific impairments in cognitive functioning. Furthermore, these impairments affect a limited range of academic or social tasks but do not have pervasive influence on general intellectual functioning. However, research has failed to differentiate this group of individuals from individuals who do not perform well in school for other reasons (Torgesen, 1989). Neuropsychological deficits that have been identified in individuals with learning disabilities include: difficulties with tactile and visual perception, psychomotor coordination, tactile and visual attention, nonverbal memory, reasoning, executive functions and specific aspects of speech and language (Roman, 1998).

Children with learning disabilities often have difficulties with memory recall, in both the academic arena and on everyday tasks, these children are unable to use effective retrieval strategies, and some may have a deficiency that effects the retrieval of previously encoded information (McNamara & Wong, 2003). Academic deficits that have been identified in this population include: deficits in math calculations and reasoning, reading comprehension, specific aspects of written language and, handwriting (Roman, 1998).

1.4.2 Behavioural Characteristics

Behavioural characteristic of children with learning disabilities (math, reading recognition, and reading comprehension) were investigated in a longitudinal research by McKinney (1989) . Although not all children with learning disabilities displayed maladaptive behavioural patterns, these patterns were found in more than one third of the sample. Moreover, children who had attention and conduct problems in conjunction with learning disabilities have poorer academic outcomes than those with no behavioural problems (McKinney, 1989).

1.4.3 Drug and Alcohol Use

Drug and alcohol use is higher in adolescents with learning disabilities than those without learning disabilities (Maag, Irvin, Reid, & Vasa 1994). Tobacco and marijuana use was higher for youth with learning disabilities; however, there was no between-group differences in the amount of alcohol used. Furthermore, this increased use by youth with learning disabilities did not appear to be related to levels of self-esteem (Maag, et al., 1994).

1.4.4 Social Deficits and Problem Solving Deficits

Social skill problems in children with learning disabilities are well documented, with such difficulties as problems with social perception and social interaction. Kavale & Forness, (1996) conducted a meta-analysis and reported that on average about 75% of students with learning disabilities have social skill deficits, as rated by self, peers or teachers. Deficits occur across most major dimensions of social skills such as: interpersonal behaviour, interpersonal perception and for intrapersonal perception. It was also found that a lack of perceived academic competence was a major factor for influencing social perceptions.

It has been suggested that social skill difficulties are not a deficit per se but rather a developmental delay. Jackson, Enright, & Murdock (1987) found that all three age groups that they investigated had improved social perceptual ability as the child aged, but that the difference between the learning disabled and non-learning disabled group remained. Authors such as Wig and Harris (1974) suggest that these difficulties arise out of an inaccuracy in labelling nonverbally expressed emotions, which is caused by a reduced visual-motor organization (as cited in Jackson, et al., 1987).

Research has indicated that children with learning disabilities have less interpersonal understanding and social adaptation than same aged peers without learning disabilities. However, it was found that social adaptation correlates with interpersonal understanding, therefore this may be the significant impairment (Kravetz, Faust, Lipshitz, & Shalhav, 1999). It has been suggested that children and adolescents with learning disabilities have deficits in specific skills required for social interaction. Such as being less sensitive to the social meaning of gestures and facial expressions as well

as having difficulty discriminating vocal tones, all of which skills are necessary to socially interact (Holder & Kirkbactrick; Sisterhen & Gerber, as cited in Kravetz, et al., 1999).

1.4.5 Emotion and Psychopathology

Learning disabilities are a risk factor internalized forms of psychopathology, particularly anxiety and depression (Jackson, et al., 1987; Roman, 1998). Research by (Glosser & Koppell, 1987) investigated the relationship between left and right hemisphere cognitive impairments in learning disabled children, and examined how these impairments are associated with emotional-behavioural patterns. They found that children with differentially lateralized cognitive deficits were also differentially predisposed to various emotional behavioural characteristics. Left hemisphere impairments (demonstrated by poor reading and spelling with better mechanical arithmetic skills) were most closely associated with depressive and anxiety related symptomatology, and less closely related to aggression and attention disorders. Right hemisphere impairments (well-developed word recognition and spelling skills but deficient arithmetic skills) were associated with the development of somatic complaints (Glosser & Koppell, 1987).

In the general child population approximately 2% have childhood depression, this increases to approximately 10% or higher for adolescents. Depression rates in adolescents with learning disabilities range from 26% to 39.5%. Although correlational, it is noteworthy that in youth who had committed suicide over a three year period 50% had been identified as having a learning disability (1998; as cited in San Miguel, Forness, & Kavale, 1996). Heath & Wiender (1996) reported that in

students with a learning disability, depression only manifested if they viewed themselves as not being social accepted by peers. It is therefore possible that the relationship between learning disabilities and depression is mediated though perceived social acceptance by peers.

1.4.6 Long-term Outcomes of having a Learning Disorder

Kavale (as cited in McKinney, 1989) suggest that academic outcome in individuals with learning disabilities is mediated by several characteristics such as; ability level, socio-economic status and self-esteem. It is argued that the presence of a learning disability alone does not predict outcomes, rather, that it is other risk or protective factors that interact with a learning disability to either facilitate or impede adjustment (Morrison & Cosden, 1997). It is likely that risk and protective factors are what ensure that those with learning disabilities are so heterogeneous. (Spreen & Strauss, 1998) reviewed a number of studies investigating the long-term and adult outcomes of children with learning disabilities. Although there were a number of contradictory findings reported, all studies found that learning disabilities persist into adulthood to some degree; however, this was contingent on a number of factors, including the severity of the disability as a child: the more severe, the more likely there was adverse effects in adulthood. However, like average achievers, learning-disabled individuals do improve somewhat developmentally (McKinney, 1989). Current interventions for learning disabilities have not been conclusively linked to positive outcomes, with occupational success and employment rates varying across studies (Spreen & Strauss, 1998). Occupational outcome is strongly related to the SES of the father (O'Conner & Spreen, 1988; Spreen & Strauss, 1998). Intelligence contributes for approx 49% of the outcome variance, with participants with higher levels of intelligence showing better

outcomes. Although few studies investigated neurological impairment, it has been found the presence of such impairment had a negative impact on outcome (Spreen & Strauss, 1998).

1.5 Specific Learning Disabilities

1.5.1 Reading Disabilities

Reading disabilities are by far the most studied learning disability, and the most common. It is reported that 80% of children involved in special education programmes have a reading disability (Lyon, et al., 2003). The DSM-IV-TR estimates the prevalence of Reading Disorder (RD) in the USA to be 4% of school-aged children. Estimates have been as high as 17.4% of school-aged children, but are more often reported between 10-15% of school-aged children (Lyon, et al., 2003). RDs are more common in males, 60 to 80% of those diagnosed with a RD are male (APA, 2000). Research suggests that this is a persistent disability, with the least severe sufferers doing the best in remedial programs (Shaywitz, et al., 1992).

Neurobiological research has identified the left-hemisphere perisylvian areas in the reading process in adults (including extrastriate visual cortex, inferior parietal regions, superior temporal gyrus, and inferior frontal cortex). The region activated depends on the reading task undertaken (See Joseph, Noble, & Eden, 2001for a full review). Post-mortems of adults with a history of learning difficulties revealed that they often have symmetrical planum temporale, adults without such difficulties tend to have larger left hemisphere regions. However, this finding is not always consistent with some MRI research not finding the symmetry. As full review of brain structures that

may be involved in reading disabilities is beyond the scope of this thesis, see (Lyon, et al., 2003) for a review.

1.5.2 Oral / Language Disabilities

Oral language disabilities are classified in the DSM-IV-TR as Expressive and Receptive Language Disorders within the category of communication disorders. It is estimated that Mixed Receptive-Expressive Language Disorder occurs in up to 5% of preschool children and 3% of school-aged children. The prevalence of language difficulties in incarcerated young girls aged between 13.5 and 18.4 years was examined using measures of receptive and expressive language (Clinical Evaluation of Language Fundamentals-3 and the Adolescent WORD Test). It was found that 19.4% of subjects performed at least 1.3 standard deviations below the mean on both measures (Sanger, Moore-Brown, Magnuson, & Svoboda, 2001). Furthermore, it was reported that all of the 67 participants were unable to express synonym for words such as *fatigue*, *crucial*, *penalty* and *justify*. They also had difficulties defining terms such as *verify*, *priority*, *occupation*, and *no vacancy* (Sanger, et al., 2001). This suggests that these youth may have difficulties expressing and comprehending language that is required for effective communication, which makes these youth vulnerable to problems in developing and maintaining relationships, as well as having difficulty meeting the requirements in an academic environment (Sanger, et a., 2001). While this research is informative, there is a notable limitation in that only females were studied; it would be beneficial to investigate if prevalence is the same in a similar male population.

1.5.3 Maths Disabilities

The DSM-IV-TR reports the prevalence of 'pure' Mathematics Disorder to be estimated at 1% of school aged children in the USA (Association, 2000). However recent studies give estimates of 4.6 to 6%, this is based on European studies that are reported to have more stringent criteria than the USA (Shalev, Auerbach, Manor, & Gross-Tsur, 2000; Lewis, Hitch, & Walker, 1994; as cited in Lyon, et al., 2003).

It is assumed that cognitive processing problems involving working memory and executive functions underlie the difficulties (Lyon, et al., 2003). There is evidence that youth with maths disabilities have difficulty learning and retrieving math facts, which results in slow, inaccurate and problem solving difficulties. There are also indicators of procedural difficulties such as the use of immature counting strategies, that are applied incorrectly (Geary, 1993).

There is evidence that distinct regions of the brain are involved in different arithmetic processes. For example, patients who had difficulties with calculations, but could read and write numbers had lesions of the left subcortical region, other difficulties include retrieving verbal knowledge including arithmetic tables. Yet other patients had similar lesions, but had difficulty with mathematical knowledge, such as subtracting and completing number section tasks. This suggests that there are a number of neural networks that are involved in arithmetic facts (Lyon, et al., 2003).

There is evidence that genetic factors play a part in math disability. It has been found that of children with a specific maths disability, 10% had another family member who also had math difficulties, and another 45% had some other type of learning disability. In a twin study, it was found that 58% of monozygotic twins shared a math disability

in comparison to 39% of dizygotic twins (Alarcon, DeFries, Light, and Pennington 1997; as cited in Lyon, et al, 2003).

1.5.4 Comorbidity

Comorbidity is high in individuals with learning disabilities with 56% of individuals also diagnosed with Conduct Disorder (CD), 12 % have Oppositional Defiant Disorder (ODD) (Kaplan, Dewey, Crawford, & Wilson, 2001), 70% are comorbid with Attention Deficit/Hyperactivity Disorder (ADHD) (Mayes, Calhourn, & Crowell, 2000) and 14% have depressive disorders (Arnold, 2000). The presence of ADHD in individuals with learning disabilities is well documented; furthermore, evidence suggests that when both disorders are present positive future outcomes are less likely to occur. Given the high comorbidity of learning disabilities and ADHD and the detrimental effects this can have on the behaviour of individuals with learning disabilities, this will be considered independently.

1.6 Attention Deficit Hyperactivity Disorder

ADHD was initially classified as 'minimal brain dysfunction' and therefore considered to be related to learning disabilities (Maynard, Tyler, & Arnold, 1999). However, it was identified as behavioural distinct from learning disabilities, therefore being categorised separately. The DSM-IV-TR recognises three subtypes; predominately inattentive, predominantly hyperactive and the combined type which involves symptoms from both inattentive and hyperactive (APA, 2000).

1.6.1 Epidemiology

The DSM-IV-TR estimates the prevalence of ADHD to be 3 to 7% in school-aged children. Others have found that ADHD occurs in approximately 3 to 5% of school-aged children (Maynard, et al., 1999).

It has been consistently shown that ADHD predicts a number of negative outcomes, including behavioural problems, mood and anxiety disorders, antisocial and drug abuse disorders, family conflict, impaired school performance, cognitive and psychosocial functioning and educational and vocational disadvantage (Greenel, Biederman, Faraone, Sienna & Garcia-Jetton, 1997). Poor social functioning is associated with ADHD; children with such deficits may be at high risk for poor outcomes. Furthermore, externalising disorders such as ADHD often overlap with various indices of academic underachievement during childhood and academic underachievement is often associated with school failure (Hinshaw, 1992).

Researchers have recently begun to consider the relationship between learning disabilities and externalising behaviour, such as ADHD. These two disorders are highly comorbid, and if present ADHD appears to exacerbate the deficits of learning disabilities, thereby making this an important variable to investigate (Mayes, et al., 2000). It is suggested that between 19% and 80% of children with ADHD have some type of learning disability (Korkman, & Pesonen 1994; Ricco & Jemison, 1998; as cited in Maynard, et al., 1999). Cantwell, & Baker, (1991) reported that of their sample of 600 children with speech / language impairments, 49% of the children with a learning disability also had a concurrent disruptive behaviour disorder. Parental

ratings indicate that youth with both a learning disability and ADHD have been rated by parents and teachers as significantly anxious and aggressive (Flicek & Landau, 1985; as cited in Brier, 1989; Cantwell & Baker, 1991). Gilger, Pennington, and DeFries 1992; as cited in (Korkman, 1994) found that in a sample of twin pairs (27 in total of both monozygotic and dizyagotic), that when there was at least one twin with a reading disability, 39% of the individuals also had an attention deficit. Moreover, it is reported that learning disabilities co-occur more often with the inattentive subtype of ADHD than the hyperactive subtype (Maynard, et al., 1999). The wide variance in rates of comorbid ADHD and learning disabilities is explained in terms of varying definitional criteria and methodological variability (Korkman, 1994). The nature of the relationship is unclear and seems to be different for subtypes of learning disabilities (Barkley, 2003). Research provides strong evidence that learning disabilities and attention problems are on a continuum, that they are likely to coexist and are difficult to tease apart (Mayes, et al., 2000).

1.6.2 ADHD & LD Continuum or Categorically Different Disorders

There is evidence that learning disabilities and ADHD are similar in presentation, making it very difficult to separate the two. Children with ADHD and learning disabilities appear to have many areas of functioning that they find more difficult than children without either of these disorders. However, it appears that if both disorders are present this exacerbates the likelihood of the previously discussed difficulties occurring, and makes these difficulties even more pronounced.

It has been found that in comparison to a group of children with ADHD or 'normal' controls. Children with both ADHD, and a learning disability are rated by teachers as

having significantly more impaired social skills, even when on medication for ADHD symptomology. This trend was also found when investigating ability to perceive nonverbal cues. Further, this trend continued when investigating the ability to perceive paralanguage cues when off medication; however, when taking medication this difference was not found (Hall, Peterson, Webster, Bolen & Brown, 1999). Kellner, Houghton, and Douglas (2003) support the above findings further adding that social impairment is more severe among children and adolescents who have learning disabilities with ADHD combined subtype in comparison to the inattentive subtype. The key areas identified as deficient in skills were; more interpersonal difficulties, social interaction anxiety, and significantly lower levels of social self-concept (e.g., specific feelings of peer isolation and peer hostility) and social confidence.

Korkman and Pesonen (1994) collected a sample described as 'pure' ADHD and learning disabled youth (in that participants only had the target disorder without comorbidity); however, analysis showed that as many as 45% of the sample met criteria for both ADHD and learning disability. Yet other researchers have reported difficulties in finding children with reading disabilities without any symptoms of ADD (Dykman & Ackerman, 1991; as cited in Korkman & Pesonen, 1994). Korkman and Pesonen (1994) reported that the primary feature of ADHD to be poor impulse control, while for reading and spelling disabilities this was phonological and linguistic problems. However, children who had both ADHD and learning disabilities demonstrated similar impairment to both the ADHD only and learning disabled only group, thereby suffering from more impairments. Furthermore, they also demonstrated unique impairments that the other 'pure' groups did not have. Overall, they appeared to have a more pervasive attention problem, thus suggesting that youth

with ADHD and learning disabilities are more severely impaired than if they just had the one disorder.

Porter and Rourke (1983; as cited in Patterson, DeBaryshe, & Ramsey, 1989) reported that about one fifth of their learning disabled sample had symptoms consistent with ADHD. Ackerman, Dykman, & Peters, 1977; as cited in (Patterson,et al., 1989) found that about half of their sample of youth with ADHD and learning disabilities engaged in antisocial behaviour; however, only a small number with learning disabilities but without ADHD engaged in such behaviour. Furthermore, this group (non ADHD with LD) demonstrated levels of prosocial behaviour and emotional stability that was comparable to those of average achievers. Brier (1989) reviewed research involving ADHD and learning disabilities and concluded that the likelihood of antisocial behaviour is increased in an individual with a learning disability and a concurrent diagnosis of ADHD particularly if aggression is present. This appears particularly true among individuals who display language deficits, and this puts these youth at greater risk of delinquent outcomes than those who do not have such deficits (Brier, 1989).

Rucklidge (2002) investigated naming speeds and executive functions in adolescents with ADHD only, reading disability only, ADHD and reading disability combined and normal controls. They found evidence of different cognitive profiles for the various groups. Adolescents with ADHD displayed slower processing speed, tended to be slower at naming objects and had more difficulties with inhibiting responses as well as displaying a greater heterogeneity in responses. These subjects were also slower in naming colours and incongruent colours/words. Adolescents with reading

disabilities displayed poorer achievement scores, had poorer verbal working memory and were much slower when naming letters and colour words. Furthermore, adolescents that had both ADHD and reading disabilities demonstrated additional cognitive deficits: overall slower reaction times and less accuracy in responses, and had more difficulty in mental arithmetic and working memory (Rucklidge, 2002). These findings demonstrate that each group does have unique cognitive deficits, and that when both disorders are present this creates additional deficits for the youth, resulting in more impairment (Rucklidge, 2002).

It is imperative at this point to note that the issue of comorbidity is one that is currently under discussion and debate. Evidence suggests that there may not be a distinct comorbitiy as in medical diagnosis, it is rather more likely that there is overlap between childhood disorders. Kaplan, et al., (2001) investigated seven disorders; reading disability, ADHD, developmental coordination disorder (DCD), oppositional defiant disorder (ODD), conduct disorder (CD), depression and anxiety. They found that 52% of the 179 children met criteria for more than one disorder, with 25% meeting criteria for three or more disorders. Furthermore, of the 126 children that met criteria for a reading disability 50% met criteria for ADHD, 18.25% met criteria for ODD, 2.38% met criteria for CD, 15.57% met criteria for DCD, and 3.17% met criteria for an anxiety disorder, while none of the subjects met criteria for depression (Kaplan, et al., 2001). Overall, 48% met criteria for only a reading disability, 24% met criteria for a reading disorder plus one other disorder, 18% met criteria for reading plus one other disorder and 10% met criteria for reading and three or more disorders. From the perspective of ADHD, 116 children that met criteria for ADHD, 54.31% met criteria for ADHD, 33.62% met criteria for ODD, 5.17% met

criteria for CD, 25% met criteria for DCD, and 4.31% met criteria for an anxiety disorder, while 0.86% met criteria for depression. (Kaplan, et al., 2001). Overall, 20% met criteria for only ADHD, 40% met criteria for a ADHD plus one other disorder, 28% met criteria for ADHD plus one other disorder and 12% met criteria for ADHD and three or more disorders (Kaplan, et al., 2001). Therefore caution must be exerted when identifying 'co-morbidities' as the presence of other disorders may actually be a result of overlap with other disorders. Learning disabilities and ADHD often co-occur, with a number of effects for the individual. Often these effects are negative and manifested in disruptive behaviours, which can lead on to delinquency and future offending.

1.6.4 Theoretical Link among ADHD, Learning Disability and Delinquency

A dual-pathway model has been proposed as a possible explanation of the link between ADHD and academic underachievement. This model suggests that ADHD predisposes individuals to ODD and CD which have adverse outcomes on school performance, thereby leading to low academic achievement (Rapport, Scanlan, & Denny; as cited in Barkley, 2003).

The relationship between ADHD and delinquency likely begins in childhood (Hinshaw & Lee, 2003). It appears that the individual has difficulties during early to middle childhood at school, which is exacerbated by the presence of ADHD symptomatology, and this impacts negatively on both academic readiness and behavioural regulation. The child then loses interest in school, forms deviant peer associations which in turn reinforce the antisocial behavioural patterns (Hinshaw &

Lee, 2003). This basic theoretical model is similar to models discussed in the next section on offending behaviour.

1.7 Offending Behaviour

1.7.1 Prevalence

The high prevalence of learning disabilities in deviant youth is well documented (Brier, 1994; Dishion, Loeber, Stouthamer-Loeber, & Patterson, 1984; Malmgren, Abbot, & Hawkins, 1999; Sanger, et a., 2001;Winters, 1997). International research indicates a relationship between the presence of a learning disability and offending; however, the prevalence of learning disabilities in offending populations is a topic that is hotly debated, estimates range from 12% or less, up to 70% or greater (Brier, 1989).

Research in 1982 by the National Centre for State Courts in the United States suggests that having a learning disability is a risk factor for delinquency. This well controlled study reported 36% of incarcerated youth were found to have a learning disability; furthermore, these youth were found to commit delinquent offences more than two times as often as non-learning disabled youth. This result remained robust even when other variables were controlled for (Brier, 1989). However, research by Malmgren and colleagues reported on longitudinal data from a 7-year prospective study and questioned whether the presence of a learning disability increased youths' risk of becoming delinquent. They found that when demographic variables were controlled for, there was not a direct relationship between having a learning disability and being delinquent (Malmgren, et al., 1999). This is in direct contrast to other research that

has found such a link (e.g. Brier, 1989), thus suggesting that further research is required.

1.7.2 Offending and SES in New Zealand

Research in New Zealand often reports that Maori and Pacific Islanders are over represented in most negative statistics: they have lower Socio-Economic Status (SES) on average, have the highest rates of imprisonment and are brought to the attention of the police and court departments more often than European New Zealanders. Research suggests that being Maori may be a risk factor for offending behaviour (Fergusson, Horwood & Lynskey, 1993). Longitudinal research has followed a group of Christchurch born children, and the findings suggest that children of Maori ethnicity had significantly higher rates of offending than Pakeha children (between 1.45 to 2.25 times higher). However, when other factors such as maternal age, maternal educational levels, family socio-economic status, family living standards and early childhood environmental factors are included in the analysis no significant difference was found. The rates of offending decreased to 1.08 to 1.55 times higher for Maori and Pacific Island children than Pakeha (Fergusson, et al., 1993). It was found that the higher prevalence of offending in Maori and Pacific Island families is due to greater SES disadvantage during childhood. Once these factors were controlled for it was clear that ethnicity was not a predictor of early delinquency (Fergusson, et al., 1993).

1.7.3 Re-offending

In New Zealand, recidivism by offenders under the age of 20 years is higher than any other age group. Thirty nine percent of released offenders are re-imprisoned, and

64.5% are reconvicted within a 12 month period (Department of Corrections, 2002). Larson (1988) suggests that youth with learning disabilities are adjudicated twice as often as those without disabilities, and are associated with higher rates of recidivism and parole failure.

Research has identified two types of risk factors that may lead to re-offending: 1) static factors, those that cannot be changed, such as age of first offence, gender, race, and 2) dynamic factors, which when addressed can lead to a change in subsequent criminal behaviour. Dynamic factors are often referred to as criminogenic needs (Andrews & Bonta, 1998). Research has identified both academic and employment skills, amongst others, as dynamic risk factors that if changed will contribute to a lower likelihood of recidivism (Brown, 2002).

Offenders with learning disabilities re-offend at higher rates than their non-learning disabled peers; furthermore, they commit more serious crimes upon re-arrest (Larson, 1988). Such findings are indicative of the importance of focusing research on factors that are likely to reduce offending among learning disabled offenders.

Research found that if uneducated prisoners were taught to read whilst in prison they were 37% less likely to return to prison upon release. Furthermore, this had an even greater impact on recidivism among younger inmates (Susswein in Keith & McCray, 2002). It is argued that although reading deficits may not cause delinquency, addressing the deficits has been shown to reduce recidivism and this may be due to the increase of skills related to work, such as reading and simple mathematics (Keith & McCray, 2002).

1.8 Theory of Development of Antisocial Behaviour

There have been a number of theories and hypothesis established in an attempt to explain the link between learning disabilities and delinquent behaviour; however, there is limited empirical support for any of these theories.

Patterson and colleagues (1989) suggest there is a sequential pattern to the development of antisocial behaviour, and that academic failure is just one of the steps along the antisocial pathway. Patterson et a.l, (1989) noted two theories that have been utilised to explain this, control theory and the social-interactional perspectives. Within control theory, it is suggested that hard discipline and a lack of supervision can disrupt the parent-child bonding pattern, this failure results in the child having low levels of internal control. In turn, this leads to negative attitudes toward school, work and authority, which are antisocial in nature. The social-interactional perspective suggests that the criminogenic family openly trains the child to engage in antisocial behaviours, and fails to teach and reinforce pro-social behaviours, resulting in the child having antisocial behaviours and being socially unskilled (Patterson, et al., 1989). Patterson and colleagues (1989) went on to argue that the coercive behaviours that are shaped and reinforced at home result in rejection by 'normal' peers and academic failure.

It is hypothesised that academic failure does not have a direct link to antisocial behaviour but rather it is one of the sequential steps. Academic failure is explained in that the child's noncompliant and under-controlled behaviour directly impedes learning. They spend less time on task than children without antisocial behaviours,

and have less academic survival skills (e.g. attending, remaining seated, completing homework, and answering questions) which are considered critical for learning to occur (Cobb, 1972, Cobb & Hops, 1973, Hops & Cobb, 1974; as cited in Patterson, et al., 1989). In conclusion, Patterson argues that the developmental trajectory of an early starter begins with poor parental discipline and monitoring, this leads to child conduct problems. In middle childhood, this results in rejection by 'normal' peers and academic failure. This ensures that in late childhood and adolescence there is strong alliances formed to deviant peer groups that then lead to delinquency.

Brier (1989) has identified three further hypotheses that have been proposed to explain the relationship between learning disability and delinquency: susceptibility hypothesis, school failure hypothesis and the differential treatment hypothesis. In contrast to (Patterson, et al., 1989), these hypotheses all imply learning disability is the primary cause of delinquency.

Susceptibility Hypothesis suggests that certain neurological and intellectual difficulties such as problems with impulse control and attention, problems with conceptualisation, comprehension, and judgement and problems with social perception makes a child with a learning disability more susceptible to engage in delinquent behaviour (Brier, 1989; Waldie & Spreen, 1993). A learning disability is not sufficient to cause delinquency however, when mediated by the presence of particular behavioural characteristics, such as ADHD, language deficits, and difficulties with social perception skills (Brier, 1989). These deficiencies in social skills place the youth at risk of delinquency (Larson, 1988). This hypothesis has two distinct perspectives. The first is that social skills are an underlying personality trait,

and that youth will learning disabilities have low levels of social skills which makes them delinquency prone (Larson, 1988). The second perspective is that the negative, social personality characteristics (such as impulsivity and poor reception to social skills) increases the likelihood of delinquency because of the low level of social skills that occur with these traits (Larson, 1988).

(Larson, 1988) argues that this hypothesis is inadequate at explaining the link between learning disabilities and delinquent behaviour. This perspective fails to address the cause of the inappropriate social characteristics. A number of deficits are identified as placing a youth with learning disabilities at risk of delinquent behaviour; however, Larson (1988) argues that a major weakness of this theory is that there is a lack of explanation as to how a learning disability accounts for the social ineffectiveness (Larson, 1988).

To determine the support for the Susceptibility Theory, and how much of this theory accounted for the delinquency that occurs when individuals have learning disabilities. Waldie and Spreen (1993) tested what are considered the defining features of delinquency: judgement, temper tantrums, cruel or mean, destructive, active and lively, and impulsive. They found that individuals with learning disabilities and persistent delinquency significantly believed they had poorer judgement than those without persistent delinquency. However, the six variables that represent acting out (fighting, temper tantrums, bossiness, disobedience, etc.) were not significantly different from the non persistently delinquent youth. Neither did the difference in rates of being destructive and abusive to property, nor hyperactivity variables; however, impulsive variables did show a significant difference, these youth were

rated as very likely to do things without thinking first. Therefore the characteristics that may make youth more susceptible to the opportunity to be involved in deviant behaviours include a lack of impulse control, inability to anticipate consequences of actions, and lack of reasonable judgment. Overall, the results indicated that two of the defining items, judgement and impulsivity, were able to distinguish between persistent and non-persistently offending youth with learning disabilities. Waldie and Spreen, 1993 contends that this shows support for the susceptibility theory, as 75% of youth were correctly classified.

The School Failure Hypothesis proposes a number of steps that lead toward delinquency. This complex hypothesis has the key notion that school failure precedes delinquent behaviour (Brier, 1989). It is suggested that learning disability leads to academic failure, which is followed by a negative self-image, which then leads to school dropout. This dropout results in the need for achievement at school (which is desired by all social classes) not being met, which leads to the youth engaging in delinquent behaviour. However, it is suggested (Waldie & Spreen 1993) that the opportunity for delinquency increases if the youth begins to associate with anti-social peer groups. Larson (1988) argues it is because of the academic and school failure there is an increased desire to satisfy the need of recognition and achievement, to have these needs met the youth forms associations with deviant peer groups, which in turn leads to delinquency (Larson, 1988).

Larson (1988) indicates that support for this theory is due to the correlational nature of delinquency and low academic performance. Further support comes from research that reports youth with learning disabilities to have greater rates of dropout than their

non-learning disabled peers (Levin, Zigmond, & Birch, 1985). However, this research is purely correlational, from which causality cannot be implied. Research by Keilitz and McCray (1986) reports that when academic intervention is undertaken with delinquent youth that there is some reduction in delinquent behaviour but this was not related to academic achievement, but rather the relationship between the tutor and the student. Larson (1996; as cited in Larson, 1988), found that in a group of young offenders who received tuition while incarcerated to gain their high school diploma recidivism rates were high, furthermore the offences that these youth were reconvicted for were more serious for learning disabled than low-achieving delinquents. As stated, it is expected that school dropout then leads to delinquency; however, Elliott and Voss (1974; as cited in Larson, 1988) actually found the converse, that delinquency rates actually peaked for school dropouts before they quit school, and once they had left school delinquency rates actually decreased. This implies that the link between learning disabilities and delinquency is not as simple as academic failure. Problematic to this theory is the key belief that school failure precedes delinquent behaviour, as most studies report delinquency and behaviours consistent with delinquent behaviour occurring prior to school failure (Richman, Stevenson, & Graham, 1985; as cited in (Brier, 1989).

Waldie and Spreen (1993) undertook analyses of the variables that would define School Failure Theory. They identified these defining features as: special help at school, learning problems, others seeing you as different, involved in school, suspended from school, and drinking alcohol. Four discriminant analyses were run to test the validity of the School Failure Theory, and to determine the chain effect that was hypothesised. It was reported that none of these results were significant; however

they were in the predicted direction. Those with learning disabilities and persisting delinquency tended to receive more help in school, were less involved in school activities, and that these youth had problems with alcohol and were suspended from school. The variables were combined and it was found that support for the school failure theory was weak, with only 64% of cases accounted for (Waldie & Spreen, 1993).

The Differential Treatment Hypothesis This hypothesis takes the position that youth with and without learning disabilities are equally as likely to behave antisocially. However, it is hypothesised that youth with learning disabilities are more likely to be picked up by police, they are more likely to be charged, with a greater risk of adjudication, and are more likely to receive more severe consequences than non-learning disabled youth (Brier, 1989).

Brier (1989) reports results from a study by the National Center for State Courts that found youth with learning disabilities were approximately two times more likely to be arrested than non-learning disabled peers, even though they were both committing the same number and type of offences. However, it was reported that the punishment received was similar for both groups (Dunivant, 1982; as cited in Brier, 1989)). Broder and colleagues also found similar results, youth with learning disabilities were adjudicated at twice the rate of non-learning disabled, even though both groups reported similar levels of antisocial behaviour (Broder, Dunivant, Smith, & Sutton 1981, Zimmerman, Rich, Keilitz, & Broder, 1981; as cited in Larson, 1988). However, this research has limitations in methodology, which may limit the usefulness of such findings (Larson, 1988).

An Alternative Hypothesis has been proposed by Larson, (1988). As can be seen by the research reviewed, there is a clear correlation between delinquent behaviours and the prevalence of learning disabilities; however, a more comprehensive theory is needed to account for the failings of the other theories already mentioned. The previously discussed theories are focused on the correlational nature of the association, rather than identifying any causal factors. This is problematic in that for intervention to be effective, it should be targeted towards the cause of the behaviour that you want to change. Larson (1988) argues that the approach to developing a causal hypothesis lies in identifying a specific skill that relates to social adjustment. It is suggested that difficulties in social cognitive problem-solving skills mediate social competence and that youth with learning disabilities are more likely to have difficulties with social competence. Evidence suggests that youth with learning disabilities have a greater likelihood of having cognitive difficulties with both social and non-social problems, this deficit seems to be most apparent in social problem solving skills which are thought to mediate overt social behaviour (Larson, 1988). Furthermore, youth with learning disabilities and delinquent youth appear to have a deficit in social awareness, which is the ability to identify and differentiate relevant social cues about themselves and others, as well as the context. Therefore, the difficulties that these youth have is in the ability to control impulsive responses, defining problems as they arise, generating appropriate solutions, evaluating consequences and monitoring their performance. While this hypothesis intuitively makes sense, it is not clear from the current research, how these social problem-solving deficits actually increase the risk of delinquent behaviour (Larson, 1988).

Until the causal mechanism is known, this too is merely correlational in nature. For a full review of these theories see Larson (1988).

1.9 The Present Study

The literature clearly identifies difficulties that occur in individuals with learning disabilities, and that the presence of a learning disability often correlates with negative outcomes. Given the sparse literature available on learning disabilities in New Zealand, the present research aims to improve the understanding of this population by providing data relating to the prevalence rates of learning disabilities in youth offending populations in New Zealand prisons.

The main purpose of this study is to obtain an estimate of the prevalence of learning disabilities, and an understanding of the specific types of disability in an offending population in order to determine the extent of the problem in New Zealand. In conjunction to estimating the prevalence rates of learning disabilities, the present study will also test the following hypotheses:

1. Offenders with a learning disability will have higher scores on the risk screen for youth offenders (this measures the likelihood of future re-offending in the next twelve months) than offenders without a learning disability.

2. A greater number of subjects with learning disability will have symptomology of ADHD than non-learning disabled subjects.

3. If both symptomology of ADHD symptoms and learning disability are present, predicted rates of reoffending will be higher in these youth, than youth with a learning disability without ADHD and non-learning disabled offenders.

4. It is expected that participants with learning disabilities will have a higher prevalence of other psychopathologies than non-learning disabled offenders.

2.0. Method

2.1. Participants

Participants were recruited from Department of Corrections Youth Justice Facilities at Christchurch Prison and Rimutaka Prison. Youth under the age of 18 years are incarcerated in a youth prison or at 19 years if they are deemed to be vulnerable in an adult prison. Sixty youth in these facilities volunteered to participate in this research. As per Department of Corrections research regulations, no incentives were provided. The age of participants ranged from 16 to 19 years, with a mean of 18.29 (standard deviation (SD) 0.79 years.

Fifty-one parents, guardians or significant others were contacted via telephone (or post if telephone details were unavailable) to gain collaborative information about the youth. Nine (15%) significant others either did not wish to be involved in the research or were unable to be contacted.

A full description of the demographics of this population can be seen in the results section (See Section 3.2).

2.2. Assessment Tools

2.2.1 Assessment of General Intelligence

A short-form of the **Wechsler Adult Intelligence Scale – Third Edition (WAIS-III)** (The Psychological Corporation, 1999) was administered to participants to gain an estimate of general intellectual functioning (IQ). The short form consisted of the Vocabulary and Block Design subtests. The Vocabulary subtest required the individual to define verbally, words presented both verbally and visually. The Block

Design subtest required the individual to replicate, using two-colour cubes, geometric patterns that were either modelled or printed two dimensionally.

The WAIS-III has been standardised on a sample of 2450 white and non-white American males and females aged between 16-89 years. This sample was considered to be representative of the United States (USA) population based on 1995 census data (The Psychological Corporation, 1997).

The Vocabulary and Block Design subtests of the WAIS-III have moderate correlations with Full Scale IQ (FSIQ), they have consistently high reliabilities (an average of .93 and .86 respectively) and are considered to be good measures of general intelligence (Sattler, 2002).Corrected test-retest reliability ranges for the age group 16-29 years are: Vocabulary .89 and Block Design .83. Inter-scorer reliability for all subtests in the WAIS-III average in the high .90s (The Psychological Corporation, 1997).

The WAIS-III is reported to have good test validity, it correlates with other measures of intellectual functioning such as the Standard Progressive Matrices FSIQ .64, and the Stanford-Binet Intelligence Scale FSIQ .88. Construct validity is reported to be adequate (The Psychological Corporation, 1997).

2.2.2. Assessment of Learning Difficulties

The **Wechsler Individual Achievement Test-II** (WIAT-II) (The Psychological Corporation, 2001) is an assessment tool used to measure achievement of individuals in a number of academic areas. The structure of the WIAT-II involves a number of

composite scores which are calculated by combining scores from individual subtests. The composite measures and subtests used in this research include: Reading composite, this is calculated using three subtests, Word Reading, which assess phonological awareness and decoding skills; Reading Comprehension, in which the subject is required to read passages and answer content questions; and Pseudoword Decoding, which assess the ability to apply phonetic decoding skills. The Mathematics composite score is calculated using two subtests: Numerical Operations, which evaluates the ability to solve simple written calculations, and Math Reasoning, which assesses the ability to reason mathematically. The Oral Language composite is calculated using two subtests: Listening Comprehension, which requires the ability to listen for details and select a picture that matches a word or sentence and also generating words that match a picture and oral description. The Oral Language composite also includes the Oral Expression subtest, in which verbal word fluency, story generation and generation of directions were assessed. For this study the Written Language composite was not utilised due to time constraints in administering the Written Expression subtest; however, the Spelling subtest was administered, which requires the participant to write words and letter blends presented orally.

The WIAT-II is suitable for individuals aged 4 to 85 years (The Psychological Corporation, 2001). The standardisation sample of relevance to this study was of individuals 4-19 years. This sample is based on national standardization samples representative of the U.S. population, including representative proportions of individuals according to each demographic variable. The age based standardisation sample included 2,950 participants ranging in age from 4 years 0 months to 19 years 11 months. Of this sample 1,473 were female and 1,477 males, with an approximately

equal number for each age group (The Psychological Corporation, 2001). The proportions of racial/ethnic groups for each age-based sample were based on the racial/ethnic group proportions of the USA students aged 4-19 years. The percentage in each group was: Whites 63.77%, African Americans 16.36%, Hispanics 15.24%, Asians 3.63%, and other 1.01%. Census Data (2001, Statistics New Zealand) indicate that the ethnicity of the New Zealand population is: European 79%, Maori 15%, Pacific 7% and Asian 7%.

The WIAT-II is reported to have good reliability and validity (The Psychological Corporation, 2001). Split-half reliability coefficients have been calculated for each age group across the subtests. The average coefficients for each subtest are: Word Reading .97, Numerical Operations .91, Reading Comprehension .95, Spelling .94, Pseudoword Decoding .97, Math Reasoning .92, Listening Comprehension .80, Oral Expression .86.

Test-retest correlations were calculated for each age group across the subtests, with average coefficients across these groups ranging from .81-.99. The inter-scorer reliability coefficients between pairs of scores ranged from .94 to .98 across ages, with an overall reliability of .94 (The Psychological Corporation, 2001). Construct validity has been determined through inter-correlations among the subtests. The WIAT-II correlates with other individually administered achievement tests such as the Wide Range Achievement Test – Third Edition (WRAT-3) that measure similar constructs such as Reading (.77), Arithmetic (.68) and Spelling (.73).

This current study utilised the low achievement model to assess for individuals with learning disabilities as opposed to the discrepancy model. It has been argued that individuals scoring one standard deviation below the mean experience the same difficulties as individuals that demonstrate an IQ-achievement discrepancy (Shaywitz, et al., 1992). In previous research many authors have utilised a cut off score of 90 on achievement tests as being an indicator of a learning disability (Fletcher, Shaywitz, Shankweiler, Katz, Liberman, Stuebing, Francis, Fowler & Shaywitz, 1994; Rucklidge & Tannock, 2002; Shaywitz, et al., 1992). However, as it was expected that there would be a higher prevalence of learning disabilities in this population, a more stringent criteria was used. In this study, composite scores were used to indicate the presence of a learning disability, if an individual had a composite score below the cut off score, they were classified as learning disabled. A cut off of one standard deviation (Standard Score of 85) below the mean on the composite scores for Mathematics and Oral Language was utilised in order to assess for a math disability and oral disability respectively. The average of the Reading subtests and Spelling subtest was determined and a cut off of one standard deviation below the mean was used for assessment of reading disabilities. Spelling scores were amalgamated with the reading subtests as an indicator of overall reading problems, as there is extensive literature that supports spelling to be an indicator of literacy and language-based skills (Petryshen, Kaplan, Fu Liu, de French, Tobias, Hughes, & Field, 2001; as cited in Rucklidge & Tannock, 2002).

2.2.3. Assessment of Behavioural Problems

To assess for symptoms of ADHD and other behavioural problems both the Adult and Adolescent Conners' Rating Scales were utilised.

The **Conners' Rating Scales – Revised Long Version (CRS-R)** was utilised primarily to screen for ADHD symptoms in conjunction with other problem areas in youth aged 17 years and below (See Appendix A). This is a cross-informant assessment of behaviour problems in children and adolescents, with an emphasis on externalising problems (Conners, 1997).

The three forms of this scale were used: the self-report, parent and teacher rating scales. The youth completed the self-report scale (CSR) and the parent form completed by a significant other that the youth has had regular contact. The teacher form was completed by either a teacher in the prison school or other key staff in the prison. The parent form consists of 80-items, including measures of oppositional behaviours, hyperactivity, indices of ADHD and cognitive problems. The teacher form consists of 59-items, providing measures of academic, social and emotional behaviours in the classroom. The 87-item adolescent self-report has the same measures as the parental scale, with the inclusion of anger control problems (Conners, 1997).

The CRS was normed on several large samples of children and adolescents throughout the United States and Canada. The sample that was used for the Conners' Parental Report Scale (CPRS) consisted of 2,482 children and adolescents between 3-17 years (1,235 males and 1,247 females) rated by either a parent or guardian. This sample identified themselves as dominantly Caucasian, then African American, Hispanic, Asian American, Native American and other (Conners, 1997).

The sample population for the Conners' Teacher Report Scale (CTRS) consisted of 1,973 children and adolescents between 3-17 years (965 males and 1,008 females). Ethnicity was described by the teachers as similar to the CPRS (Conners, 1997). The sample population used for the Conners' Adolescent Self-report Scale (CASS) considered of 3,394 adolescents (1,558 males and 1,836 females) between ages 12-17 years. Again similar distributions of ethnicity to the CPRS were reported (Conners, 1997).

Internal consistency for all scales ranges from .75-.96. Test-retest reliabilities range from .47-.92. Construct validity is based on the results of a factor analysis, and considered to be acceptable. Convergent validity ranges from .95-.99, with good criterion validity (Sattler, 2002).

The **Conners' Adult ADHD Rating Scales (CAARS)** have been designed to screen for ADHD symptoms in adults from 18 years (See Appendix B). The scales consist of the symptoms of ADHD as described in the DSM-IV-TR. The long version, which was used in this research, includes measures of inattention and memory problems, hyperactivity and restlessness, impulsivity and emotional lability and problems with self-concept (Conners, 1999). The scale consists of a self-rating form and an observer form to be completed by an observer who is familiar with the adults' behaviours.

The normative sample for the CAARS self-report forms consists of 1,026 adults (466 men and 560 women) with an age range from 18 to 80 years. The mean age for men was 38.99 (SD = 12.54). The normative sample for the CAARS observer forms

consists of 943 adults (433 men and 510 women) who range in age from 18-72 years. The mean age for men was 38.04 years (SD = 13.21).

Internal reliability was measured using Cronbach's alpha coefficient, on the various self-report measures this ranged from .64-.89 for men in the 18-29 year age group. Internal reliability on the observer measures ranged from .74-.92 for the same gender and age group. Inter-item correlations for self-report measures ranged from .19 to .57 and observer measures ranged from .31 to .62 for men in the 18-19 year age group. Test retest reliability was conducted on 61 subjects (33 men and 28 women), correlations ranged from .88 to .91 on self report measures (one month interval) and .85 to .95 for observer measures (two week interval). The standard error of measurement (SEM) on the CAARS self report ranges from 1.36 to 3.02 in 18 to 29 year old men. The SEM on the CAARS observer form ranges from 1.23 to 3.05. The standard error of prediction (SEP) on the CAARS self-report form ranges from 1.28 to 2.99. On the CAARS observer form SEP ranges from 1.20 to 2.49 in 18 to 29 year old men (Conners, 1999).

The confirmatory factor analysis of the four-factor structure of the CAARS self-report and observer items meet the criteria standards for good fit. Discriminant validity is reported to be good, with an overall correct classification rate of 85%. Construct validity is reported regarding current ADHD symptoms and retrospective reports of symptoms from childhood or adolescents and the relationship between self-report and observer ratings of symptoms. The correlations between current and childhood symptoms ranged from .37 to .67 and were all statistically significant at $p<.01$. The

correlations between self-report and observer ratings for males (N=98) ranged from .41 to .61 and were all statistically significant at $p<.05$.

Internal consistency of items ranges from .49-.91, inter-item correlations ranges from .26-.68 and test-retest reliability ranges from .85-.95. The CAARS has good discriminant validity.

The current study used a cut-off T-score of greater than 65 by two or more raters as being indicative of significant symptoms of ADHD.

2.2.4 Assessment of Psychological Symptoms

The **Brief Symptom Inventory (BSI)** is a 53-item self-report inventory (See Appendix C) designed to reflect the psychological symptom patterns of psychiatric and medical patients as well as community non-patients over the past seven days (Derogatis, 1993). The BSI is scored and profiled in terms of nine primary symptom dimensions: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism, and three global indices of distress (Derogatis, 1993). The BSI has proven to be highly sensitive with psychiatric patients, various student samples, prison populations, patients with drug and alcohol problems and individuals with sexual dysfunctions (Derogatis, 1993).

Four major norms have been developed for the BSI, derived from four distinct samples within the USA. Of relevance to this study is the adolescent nonpatients and adult nonpatients. In the adult nonpatient sample there were 494 males and 480 females with a mean age of 46.0 and a standard deviation of 14.7. Of the sample

85.5% were described as white, 11.4% described as black and 3.1% described as other. The majority of the population was married, 60.1%, and 24.5% described as single with the remaining 15.4% described as other. Social class data was unavailable for this group.

The sample that made up the adolescent nonpatient norms had a mean age of 15.8 with a standard deviation of 1.1, and a range of 13 to 19 years. There were 1,601 males and 807 females in the sample. Of the sample 58% were described as white, 30% described as black and 12% described as other. Social class was modally distributed in the working class group; however, the author notes that there is good representation in the other social economic groups as well (Derogatis, 1993). The norming population is comparable to the New Zealand population in that the largest number of participants were described as white, in New Zealand, Europeans account for 79% of the population, with 15% described as Maori, and 14% as other.

Internal consistency coefficients were established using Cronbach's coefficient alpha, which uses the internal consistency method whereby inter-item correlations are analogous to correlations among alternate forms of the test. This method makes the assumption that the average correlation among existing items is a good estimate of the correlation among items in a hypothetical alternate form (Nunnally, 1970; as cited in Derogatis, 1993). Alpha coefficients for all nine dimensions were very good, ranging from .71 to .85 (Nunnally, 1970; as cited in Derogatis, 1993). Other researchers have independently reported internal consistency coefficients for the BSI, ranging from .78 to .83 and above (Croog et al., 1990; as cited in Derogatis, 1993). Test-retest reliability for the BSI over a two-week period ranged from .68 for dimensions that

would be expected to be changeable to .91 for more stable dimensions. The Global Severity Index demonstrated a stability coefficient of .90, which suggests that the BSI represents a consistent measurement across time (Derogatis, 1993).

The BSI shows impressive convergent validity with the Minnesota Multiphasic Personality Inventory (MMPI) with correlations between .30 and .72. The BSI shows very high correlations between like symptom dimensions on the Symptom Check List-90-R (SCL-90-R) between .92 and .99 in a psychiatric outpatient population (Derogatis, 1993). Construct validity was good with factor loadings for the nine factors determined from a principal components analysis between .35 and .71. The BSI appears to have good predictive validity as noted by research undertaken in populations such as comorbid psychiatric illness in medical populations, cancer populations (Stefanek, Derogatis & Shaw; Derogatis & Spencer as cited in Derogatis 1993), psychoneuroimmunology (Kiecolt-Glaser, Arner et al; Pert as cited in Derogatis, 1993), psychopathology (Amenson & Lewinsohn as cited in Derogatis, 1993), pain assessment/management (Kremer, Atkinson and Ignelzi as cited in Derogatis, 1993), HIV research (Rabkin et al; Williams, Rabkin, Gorman & Ehrhardt, as cited in Derogatis, 1993), hypertension research, (Groog et al; Glik, Steadman, Pharm, Michels & Mallin, as cited in Derogatis, 1993) and many more (Derogatis, 1993).

2.2.5 Assessment of Malingering

As the participants were offenders who may see a benefit in doing poorly on these tasks (Simon, 1994), the **Rey Fifteen Item Memory Test (FIMT)** was used to screen for possible malingering by the participants. The test involves the participant being

shown a card (See Appendix D) containing 15 items for 10 seconds and then being asked to draw the items from memory. This is considered an easy test; however, malingerers are thought to misjudge the difficulty of the task and therefore perform more poorly than most patients. It is suggested that a recall of nine of the 15 items should be achievable in an individual who is not severely impaired (Lezak, 1995; Simon, 1994; Spreen & Strauss, 1998).

Simon (1994) reported that the cut-off score of nine correct items resulted in correct classification of 86% of inpatient forensic subjects. It is reported that independent raters showed 95% and 97% agreement on items correct and rows correct. Information on test-retest scores is unavailable for this measure; however, a similar 16-item test achieved a reliability coefficient of .48 following a two week interval (Spreen & Strauss, 1998).

2.2.6 Individual and Family Demographic Information

The **History Questionnaire (HQ)** (See Appendix E) was completed by a parent/caregiver of the young person taking part in the study. Information regarding a family history of mental illness, including anxiety, depression, dysthymia, bipolar, psychosis, behavioural and learning problems and drug and alcohol problems were also examined. Information regarding the young person's developmental history was obtained. This included the age at which they began to walk and talk and concerns regarding developmental delay. Information was also collected on the pregnancy and birth including complications during the pregnancy, any substances used and emotional distress of the mother during this time and any delivery problems. Further information was collected on a general history of the child's contacts with mental health professionals, head injuries, loss of consciousness, ear infections, health

problems, learning problems and current medications. From this questionnaire information was also collected on the parents including ethnicity, education level, occupation and income. Each participant in the present study was ranked based on their parents' occupation as reported on the HQ.

2.2.7 Assessment of the Likelihood of Re-offending

The **ITAC - Risk Screen for Youth Offenders (ITAC)** has been designed by the Department of Corrections to identify young male offenders who are at risk of future adult criminal offending and is used to diagnose and treat these youth offenders. It is designed around robust predictors of recidivism (Department of corrections, 2003), which are based on research by Moffitt, 1990, Dalteg & Levander, 1998 and Skilling, Quinsey & Craig, 2001. The screen (See Appendix F) comprises of 24 questions that explore the behavioural history of the offender from both the offender's perspective and the perspective of a significant other such as a parent or grandparent. The youth was interviewed in person, while the significant other was questioned over the telephone; however, due to some parents not having telephones they were sent written copies of the questionnaire. The responses were collated into four scales: 1) Reliability of responses – allows a check between informants that responses are accurate, 2) Childhood disruptive behaviour - which explores behavioural characteristics of ADHD, CD and ODD, 3) Delinquency – measures the progress to delinquency, from early offending behaviour through to early teenage behaviour, and 4) Teenage crime – measures the extent to which early delinquency progressed to adolescent criminal offending and associations with other offenders. The four scales are then totalled to create a Total Risk Score. The Total Risk Score is then converted

into a Probability of Reconviction Score, that indicates how likely the youth is to be reconvicted within the next 12 months.

There is limited information on the reliability and validity of this measure; however, unpublished research on the ITAC suggests good validity where in the initial trial the area under the ROC curve was 0.91 (Scott, 2003). This is the primary risk assessment tool utilised by the Department of Corrections.

2.3. Procedure

Ethical approval for this study was obtained from the University of Canterbury Human Ethics Committee and Department of Corrections.

All youth at Christchurch Youth Prison and Rimutaka Youth Prison were given the opportunity to be involved in this research. Participants were recruited for the study by prison staff at the Department of Corrections. Participants were made aware that involvement was voluntary and that there would be no benefits to the individual for being involved in the study. However, at the conclusion of the study Christchurch Youth were provided with a BBQ by prison staff and Rimutaka Youth received a chocolate bar from the researcher.

Research was undertaken within the prison facilities, in private offices that were located within the youth unit. Each youth was tested individually with prison staff occasionally observing from outside the room to ensure the safety of the researchers. Each youth was escorted to the office area where the study was explained to them. At

this stage they were given the opportunity to either leave or continue with the research. Four youth in total (two from each Rimutaka and Christchurch youth prisons) refused to participate in the study. If they agreed to continue they were then given an information sheet, which provided further details on the research (See Appendix G). The youth was given the option of either reading this information themselves or having the researcher read this to them, as many of the youth stated that they had difficulty reading and understanding. They were then given the opportunity to ask any questions and given a further opportunity to decline involvement. If they still wished to proceed they then completed a copy of the consent form prior to their participation in the study (See Appendix H). The consent form again noted the voluntary nature of participation and that the participant may withdraw from the study at any stage of the investigation without question. Information regarding the confidential nature of the study and who would have access to the information was also addressed in the information sheet and the consent form. The youth was given the opportunity to ask questions or seek clarification prior to beginning the study. As part of the consent process youth were asked to identify a parent/guardian or someone that knew them well as a younger person, which the researchers could contact to gain collaborative information about the youth. The youth was informed that information they provided would not be shared with this person, and vice versa.

Following the provision of information about the study and consent being gained, the assessment took place. All assessments were conducted by clinical psychology graduate students trained in psychometric testing. Firstly, each participant was administered the FIMT to assess for malingering, followed by the Vocabulary and Block Design subtests of the WAIS-III. A copy of the appropriate Conners' Rating

Scale was then administered (depending on the age of the participant). This was followed by subtests of the WIAT-II: Word Reading, Numerical Operations, Reading Comprehension, Spelling, Pseudoword Decoding, Maths Reasoning, Listening Comprehension, and Oral Expression. Participants were then asked to complete a copy of the BSI. Finally participants were asked structured interview questions from the ITAC.

Due to the difficulties many of the participants in this study experienced in reading and understanding the questionnaires, participants were able to either complete the questionnaires independently and discuss any difficulties with the investigator or if they chose, the investigator would read out the questions and the participant would respond verbally. Participants were given as much assistance as they required within the limitations of test administration, with the researcher being consistent in the responses given.

The significant other was contacted via telephone if possible or questionnaires sent if telephone contact was not available. The significant other was informed of the research, advised that consent had been given for contact to be established and that their involvement was entirely voluntary. If they wished to participate, the ITAC interview was conducted and the appropriate Conners' Rating Scale completed, with the researcher reading the questionnaire and receiving verbal responses. The significant other was also asked questions from the History Questionnaire. They were advised that they could decline to respond to any questions and that the information would not be shared with the youth nor was any information gained going to impact on the youth's sentence. If the parent was unable to be contacted via telephone a

covering letter detailing the research (See Appendix I) was posted along with copies of the questionnaires.

Data collection on the risk of re-offending using ITAC was undertaken in conjunction with staff at Department of Corrections Psychological Services (DCPS). DCPS collected some data using ITAC from Christchurch Youth Prison. This current study collected ITAC data from both Christchurch and Wellington youth, with information being shared between the two studies.

Given that this current study involves clinical research, at the conclusion of testing, participants received written feedback on their results on the WIAT-II. At this stage, they were also given contact details of the researcher in case they had any further questions or concerns (See Appendix J for a copy of a generic report).

3.0. Results

Data analysis in this study was conducted using *Statistica* a statistical package for the Social Sciences. T-tests, multivariate (MANOVA) and univariate analyses of variance (ANOVA) were used to examine group differences. If the overall test of significance was significant ($p<0.05$), the subsequent univariate analyses were interpreted. Comparisons of significant between group differences were examined with post-hoc Tukey tests ($p<0.05$). Effect size calculations were used to determine the extent of the difference between groups when the sample size was small. Chi-square analyses were used for comparisons of the categorical variables.

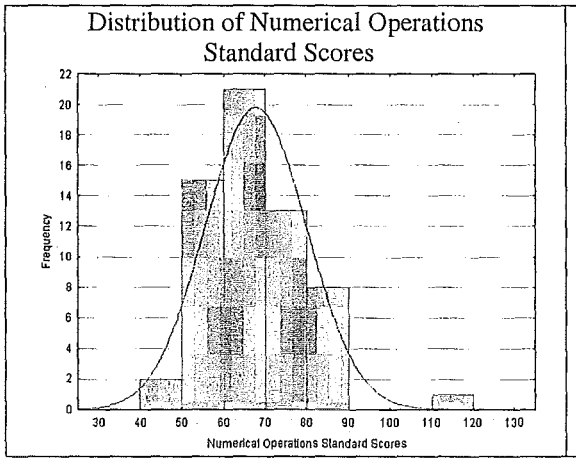
3.1. Prevalence of Learning Disabilities in Youth in Prison

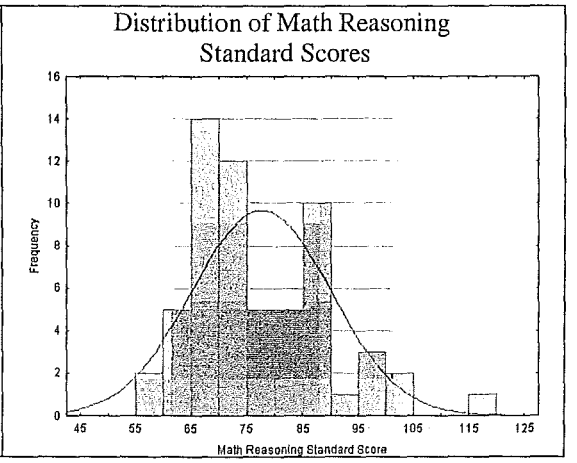
It was found that 91.67% (n=55) of youth offenders in the two Youth Prisons sampled had at least one average score or composite score below 85 on the Wechsler Individual Achievement Test – 2nd Edition (WIAT-II). Additionally, 55% (n=33) scored below 85 on the measure of reading disability, 85% (n=51) scored below 85 on the maths composite score and 65% (n=39) scored below 85 on the oral composite score. Table 3.1 shows the overall mean and standard deviation scores on the WIAT-II for all participants.

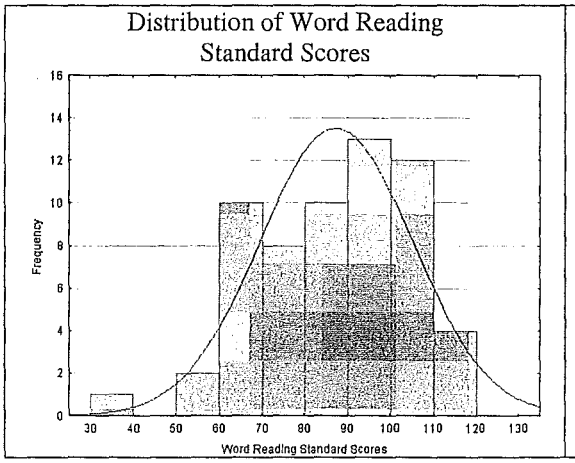
Distribution of the WIAT-II scores tended to be varied with most participants scoring below the 'normal' mean of 100. Figure 3.1 illustrates the distribution of the participant's scores on all of the subtests that make up the subtests of the WIAT-II.

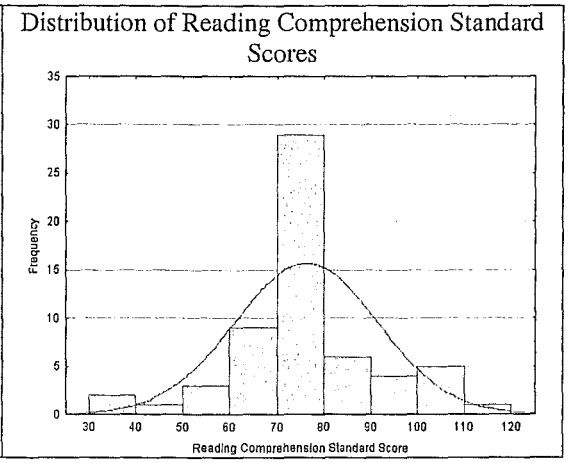
Table 3.1. WIAT-II means (*M*) and standard deviations (*SD*) for all participants (*n*=60).

Subtest/Composite Score	*M*	*SD*	Minimum Score	Maximum Score
Word Reading	87.07	17.72	40	118
Reading Comprehension	75.93	15.27	40	111
Psuedoword	90.32	17.21	52	124
Spelling	83.45	15.33	40	112
Reading Average Score	*84.19*	*14.61*	*43*	*112.75*
Numerical Operation	67.65	12.09	46	118
Math Reasoning	77.43	12.37	56	118
Mathematics Composite Score	*70.15*	*14.06*	*48*	*120*
Listening Comprehension	82.70	12.94	57	117
Oral Expression	91.65	15.75	67	138
Oral Composite Score	*84.5*	*13.08*	*60*	*118*









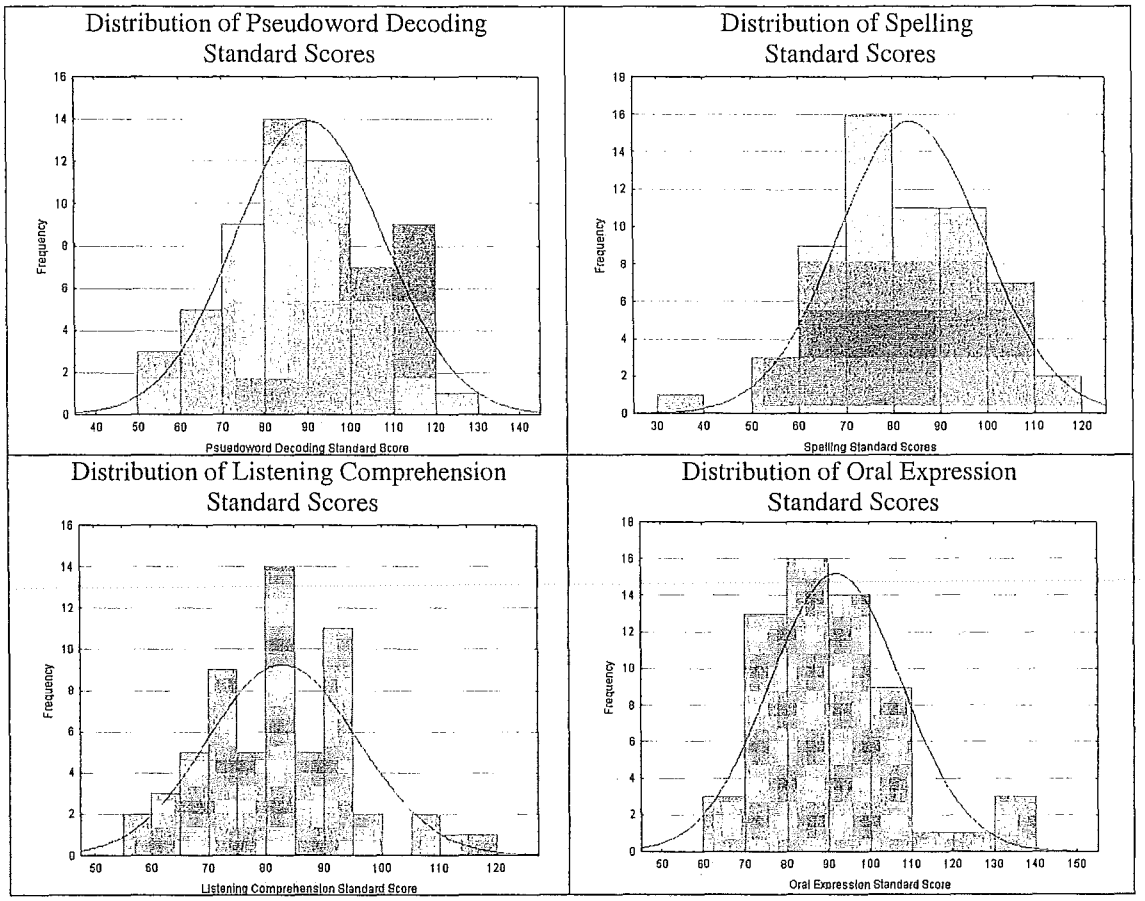


Figure 3.1. Distribution of standard scores on the subtests of the WIAT-II subtests.

The percentage of youth that had a standard score below the cut-off of 85 on each of the subtests can be seen in Table 3.2. The reading comprehension and math subtests had the largest percentage of youth scoring below the cut-off score of 85. A number of participants met criteria for more than one learning disability: 41.6% (n=25) had difficulties in all three areas examined, 30% (n=18) met criteria for two learning disabilities, 20% (n=12) met criteria for one learning disability while only 8.4% (n=5) did not exhibit any difficulties.

Table 3.2. Percentage of subjects with WIAT-II standard scores below 85.

Subtest	***n***	**Percentage of Youth with Standard Scores <85**
Word Reading	26	43%
Reading Comprehension	49	81.67%
Psuedoword	21	35%
Spelling	32	53.33%
Numerical Operation	55	61.97%
Math Reasoning	43	71.67%
Listening Comprehension	31	51.67%
Oral Expression	23	38.33%

Data analysis found significant differences (*t*-test for independence) between the means of the WIAT-II for youth with reading, maths and oral disabilities and those that did not have that specific disability type (e.g. comparison of reading disabled versus non reading disabled offenders). See Table 3.3 for a summary of the means and standard deviations of the reading disabled and non-reading disabled offenders. Table 3.4 display the means and standard deviations of offenders with and without a maths disability, and Table 3.5 displays the means and standard deviations of offenders with and without oral language disabilities. In addition to testing the difference mean score on the WIAT-II for disabled and non-disabled offenders, effect sizes (*d*) for the obtained differences were calculated. The effect size calculations provided important information regarding group differences not found due to the differences in sample size of learning versus non-learning disabled offenders. An effect size of $d = .2$ is considered to be a small, $d = .5$ is considered to be a medium effect size and $d = .8$ is a large effect size (Cohen, 1988).

Table 3.3. Comparison of reading disabled and non-reading disabled groups on subtests and composites scores on the WIAT-II.

	Reading Disabled (*n*=33)		**Non-Reading Disabled** (*n*=27)		*t*	*d*
	M	*SD*	*M*	*SD*		
Word Reading	74.33	12.21	102.63	8.49	-10.18**	-0.80
Reading Comprehension	68.57	12.72	84.92	13.30	-4.85**	-0.53
Psuedoword	78.54	12.06	104.70	10.14	-8.97**	-0.76
Spelling	73.40	10.61	95.74	10.47	-8.16**	-0.73
Reading Average Score	*73.71*	*9.36*	*97.00*	*8.17*	*-10.14***	*-0.80*

Note: * = $p < .05$; ** = $p < .01$

Table 3.4. Comparison of maths disabled and non-math disabled groups on subtests and composites scores on the WIAT-II.

	Math Disabled (*n*=51)		**Non-Math Disabled** (*n*=9)		*t*	*d*
	M	*SD*	*M*	*SD*		
Numerical Operation	64.69	7.98	84.44	17.50	-5.54**	-0.59
Math Reasoning	74.16	8.70	96.0	14.08	-6.27**	-0.68
Mathematics Composite Score	*65.67*	*8.23*	*95.55*	*12.39*	*-9.06***	*-8.12*

Note: * = $p < .05$; ** = $p < .01$

Table 3.5. Comparison of oral language disabled and non-oral language disabled groups on subtests and composites scores on the WIAT-II.

	Oral Disabled (*n*=39)		**Non-Oral Language Disabled** (*n*=21)		*t*	*d*
	M	*SD*	*M*	*SD*		
Listening Comprehension	77.71	10.82	91.95	11.54	-4.75**	-0.54
Oral Expression	83.51	6.69	106.76	14.81	-7.68**	-0.71
Oral Composite Score	*77.18*	*6.03*	*98.09*	*11.71*	*-9.16***	*-0.62*

Note: * = $p < .05$; ** = $p < .01$

As the prevalence of learning disabilities in youth prisoners was so unexpectedly high, running analyses between the learning disabled group and non-learning disabled group was not appropriate in most instances. Given these initial results, rather than comparing learning disabled offenders (n=55) with non-learning disabled offenders (n=5), subsequent comparisons have been made between individual learning disability subtypes (e.g. reading disability, maths disability and oral language disability).

3.2. Sample Description

3.2.1. Demographic Characteristics

A total of sixty youth participated in this study, 34 were based at the Christchurch Youth Prison (two youth from this prison declined to participate), with the remaining 26 based at Rimutaka Youth Prison (two youth from this prison declined to participate). The age of participants ranged from 16 to 19 years, with a mean of 18.29 years (SD=0.79). There was a significant difference between the age of participants from Christchurch Youth Prison (M=17.97, SD=0.60), and Rimutaka Prison, (M=18.71, SD=0.83), as shown by a t-test, t (60) = -4.04, p <0.01.

Ethnicity was determine from the offenders prison file, it was found that 51.67% (n=31) of the sample was identified as NZ Maori, 45.0% (n=27) were identified as NZ Pakeha and 3.33% (n=2) identified as other. Furthermore, of the non-learning disabled offenders 60% (n=3) were Maori and 40% (n=2) were Pakeha. Of the learning disabled offenders 50.91% (n=28) were Maori, 45.45% (n=25) were Pakeha and 3.33% (n=2) were identified as other.

It was reported that participants left school at a mean age of 14.56 years, there was no significant difference in school leaving age between testing locations (Christchurch Youth Prison, M=14.44, SD=1.05; Rimutaka Prison, M=14.73, SD=1.64), t (60) = -.94, *n.s.* However, a significant difference in the age that participants left school was found between offenders with a learning disability (M=14.44, SD=1.12) and offenders without a learning disability (M=16.0, SD=1.0), t (60) =-3.01, p<0.01.

Demographic data was gathered from informants using the History Questionnaire (HQ) and is presented in Table 3.6 below. Data was collected for 44 participants; however, some informants were unable or unwilling to complete all sections of the questionnaire. Of notable interest is the high rate of head injuries and substances use during pregnancy. Given this finding, substances used during pregnancy were broken down into subcategories. It was found that 12.20% (n=5) of biological mothers used medicine, 48.78% (n=20) used cigarettes and 32.50% (n=13) used alcohol or drugs during their pregnancy.

Parents/caregivers were asked if they, or anyone else, had thought that the target child was slow to develop. It was reported that 15.56% (n=7) of parents had been told by another individual that they thought the child was a slow developer. Furthermore 20% (n=9) of parents themselves thought their child was slow to develop. There was a moderate correlation between parents belief that their child was slow to develop and scores on the WIAT-II, r = 0.55, p <0.05.

Table 3.6. Ethnicity and parental demographics, data from the History Questionnaire.

Demographic Variable	%	Demographic Variable	%
Family n=43		*Parental Income n=37*	
History of Psychological Disorders	86.67%	Less than $20,000	27.78%
		$20,000-$40,000	44.44%
		More than $40,000	27.78%
Parental Education n=43		*During Pregnancy: n=41*	
No School Cert.	65.12%	Bleeding	5%
School Cert. in one or more subjects	9.30%	High Blood Pressure	25%
		Convulsions, Seizures	7.5%
Sixth form cert. or University entrance	2.33%	Infections	5%
		Severe Nausea/Vomiting	22.50%
Post-secondary	13.95%	Substances Used During	63.41%
University degree	9.30%	Emotional Distress	35%
Delivery n=41		*Development n=44*	
Caesarean Section	14.63%	Head Injury with Loss of Consciousness	23.91%
Breeched or Forceps	29.27%		
Problems Breathing/ Jaundiced	51.22%	Ear Infections	47.73%
		Other Child Health Problems	85%
		Child Mental Health Problems	20%

The age at which youth began to talk and walk was also investigated. It was found that 45.45% (n=20) of youth began walking within their first year; 25% (n=11) began walking between 13 to 18 months; 4.55% (n=2) walked between 19 to 24 months, with 25% (n=11) of parents not remembering. It was further found that 43.18% (n=19) of youth first walked within their first years; 9.09% (n=4) first walked between 25-30 months; 2.27% (n=1) first walked between 31-36 months; 6.82% first walked after 36 months and 38.64% (n=17) of parents were unsure when their child first walked.

3.2.2. Measure of Intelligence

All youth in this study had their Full Scale Intelligence Quotient (FSIQ) estimated by the Vocabulary and Block Design subtests of the Wechsler Adult Intelligent Scale – 3rd Edition (WAIS-III). The sample were found to have a mean FSIQ of 89.1 with a standard deviation of 10.1. Additionally FSIQ scores ranged between 68 to 117 (See Figure 3.2). The mean standard score for all participants on the Vocabulary and Block Design subtest were 7.2 (*SD*=2.09) and was 9.05 (*SD*=2.17) respectively.

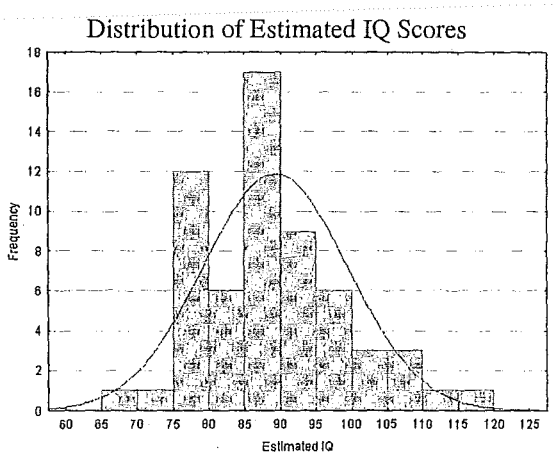


Figure 3.2. Distribution scores of estimated FSIQ for all offenders.

Participants with learning difficulties (*n*=55) had a mean estimated FSIQ of 87.71 (*SD*= 8.93) and participants without learning difficulties (*n*=5) had a mean estimated FSIQ of 105.20 (*SD*= 8.50). A two-tailed t-test revealed that the non-learning disabled group had significantly higher estimated FSIQ than the learning disabled group, t (60) = -4.21, $p<.001$. The distribution of scores can be seen in Figure 3.3.

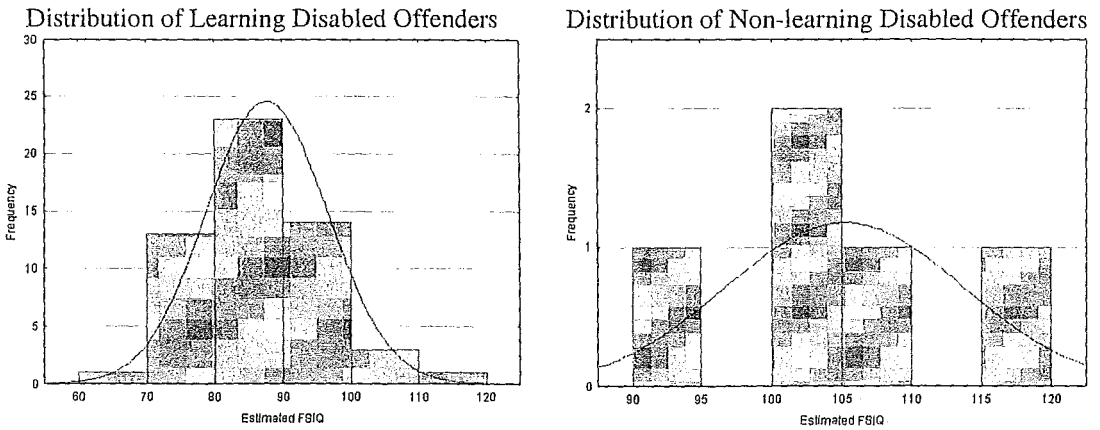


Figure 3.3. Distribution of estimated FSIQ Scores on the WAIS-III

The unexpectedly high prevalence of learning disabilities within this sample, it was warranted exploration of the specific types of learning disabilities. As can be seen in Table 3.7 it was found that the reading disabled group of offenders was not significantly different from the non-reading disabled group of offenders on the measure of estimated FSIQ. However, as would be expected there was a significant difference between the two groups on the Vocabulary subtest, with the reading disabled group performing worse than the non-reading disabled group. No difference was found between the two groups on the Block Design subtest.

Table 3.7. Comparison between reading disabled and non-reading disabled offenders on measures of FSIQ.

	Reading Disabled (*n*=33)		**Non Reading Disabled** (*n*=27)		*t*	*d*
	M	*SD*	*M*	*SD*		
Estimated FSIQ	87.36	8.22	91.37	11.76	-1.55	-0.19
Vocabulary	6.45	1.42	8.04	3.04	-2.99**	-0.32
Block Design	9.12	2.07	8.96	1.24	0.28	0.05

Note: * = $p < .05$; ** = $p < .01$

T-test analysis showed that the math disabled group of offenders were significantly different from the non-math disabled group of offenders on the measure of estimated FSIQ. There was also significant differences between the two groups on the Vocabulary subtest, and the Block Design subtest, with math disabled offenders performing worse that non-math disabled offenders on both subtests (See Table 3.8).

Table 3.8. Comparison between Math Disabled and Non-Math Disabled Offenders on Measures of IQ.

	Math Disabled (*n*=51)		**Non Math Disabled** (*n*=9)		*t*	*d*
	M	*SD*	*M*	*SD*		
Estimated FSIQ	86.98	8.56	101.55	9.41	-4.64**	-0.63
Vocabulary	6.76	2.42	9.67	2.42	-4.39**	-0.51
Block Design	8.72	2.15	10.29	2.15	-2.93**	-0.34

Note: * = $p < .05$; ** = $p < .01$

T-test analysis also found that the oral language disabled group of offenders was not significantly different from the non-oral language disabled group of offenders on the measure of estimated FSIQ. However, while a significant difference between the two groups on the Vocabulary subtest was found, no difference was found on the Block Design subtest (See Table 3.9).

Table 3.9. Comparison between oral language disabled and non-oral language disabled offenders on measures of IQ.

	Oral Language Disabled (*n*=39)		**Non Oral Language Disabled** (*n*=21)		*t*	*d*
	M	*SD*	*M*	*SD*		
Estimated FSIQ	86.13	8.87	94.81	9.95	-3.47**	-0.42
Vocabulary	6.41	2.35	8.67	2.35	-4.63**	-0.43
Block Design	8.79	1.83	9.52	1.58	-1.25	-0.21

Note: * = $p < .05$; ** = $p < .01$

3.2.3. Offending Behaviour

The number and type of offences committed by youth in the study was examined. The current number of offences committed by the youth had a mean of 4.5 (*SD*= 3.78), with a range from 1 to 22 offences. The mean number of past offences for all subjects was 6.07 (*SD*= 3.78), with a range from 0 to 28 offences.

T-test analysis was conducted to compare the number of current offences committed by youth meeting criteria for the various disability types with youth not meeting the criteria of a learning disability. Number of current offences did not significantly differ between subjects with a learning disability and those without. Furthermore, no statistical difference was found when individual learning disability types were analysed (See Table 3.10)

Table 3.10. Number of current offences committed by learning and non-learning disabled offenders.

	Number of Current Offences – LD (*n*=55)		**Number of Current Offences – NLD** (*n*=5)		*t*	*d*
	M	*SD*	*M*	*SD*		
LD	4.33	3.83	5.80	3.11	-0.83	-0.21
Reading	4.57	4.38	4.30	2.96	0.28	0.04
Math	4.27	3.93	5.44	2.70	-0.85	-0.17
Oral	4.64	3.98	4.09	3.44	0.53	0.07

Note: * = $p < .05$; ** = $p < .01$

T-test analysis was conducted to compare the number of past offences committed by youth meeting criteria for the various disability types with youth not meeting the criteria of a learning disability. Number of past offences did not significantly differ between subjects with a learning disability and those without. Furthermore no

statistical difference was found when individual learning disability types were analysed (See Table 3.11).

Table 3.11. Number of past offences committed by learning disabled and non-learning disabled offenders.

	Number of Past Offences – LD (n=55)		**Number of Past Offences – NLD** (n=5)		*t*	*d*
	M	*SD*	*M*	*SD*		
LD	6.00	8.65	6.80	9.96	-0.19	-0.04
Reading	5.73	8.12	6.48	9.44	-0.33	-0.04
Math	6.02	8.67	6.33	9.19	-0.10	-0.02
Oral	6.33	3.85	5.77	9.43	-0.32	-0.04

Note: * = $p < .05$; ** = $p < .01$

Offence type data was divided into categories (based on the classification system used by New Zealand Police), and comparison made between learning disabled and non-learning disabled offenders within each type of learning disability (See Appendix K for a list of offences within each category).

It should be noted that due to considerable overlap between learning disability types e.g. many individuals with a maths disability also have a reading and/or oral language disability, group comparisons within each disability subtype cannot be performed. The analysis of the frequency of offences per disability type was conducted utilising chi-square for independence to examine whether there were any significant differences between disabled and non-disabled offenders (See Table 3.12 To 3.14).

There were no significant differences between reading and non-reading disabled offenders on type of current offences committed, χ^2 (8, 60) = 5.30, *n.s.*

Table 3.12. Percentage of current offences committed by reading and non-reading disabled offenders.

	Reading Disabled *n*=33		**Non-reading Disabled** *n*=27	
	n	%	*n*	%
Dishonesty Offences	17	51.51	15	55.56
Drug & Anti-social Offences	2	6.06	5	18.52
Violent Crime	20	60.60	15	55.56
Property Damage Offence	1	3.03	2	7.41
Property Abuse Offences	3	9.09	5	18.52
Administrative	2	6.06	1	3.70
Sexual Offences	4	12.12	3	11.11
Other	8	24.24	6	22.22

Table 3.13. Percentage of current offences committed by math and non-math disabled offenders.

	Math Disabled *n*=51		**Math Non-Disabled** *n*=9	
	n	%	*n*	%
Dishonesty Offences	24	47.06	3	33.33
Drug & Anti-social Offences	4	7.84	2	22.22
Violent Crime	31	60.78	2	22.22
Property Damage Offence	3	5.88	1	11.11
Property Abuse Offences	7	21.21	1	11.11
Administrative	3	5.88	0	0
Sexual Offences	7	21.21	1	11.11
Other	10	19.61	6	66.67

There were no significant differences between math and non-math disabled offenders on type of current offences committed, χ^2 (8, 60) = 3.75, *n.s.* There were no significant differences between oral and non-oral language disabled offenders on type of current offences committed, χ^2 (8, 60) = 3.61 *n.s.*

Table 3.14. Percentage of current offences committed by oral language and non-oral language disabled offenders.

	Oral Disabled *n*=39		**Non-Oral Disabled *n*=21**	
	n	%	*n*	%
Dishonesty Offences	20	51.28	12	57.14
Drug & Anti-social Offences	5	12.82	2	9.52
Violent Crime	22	56.41	13	61.90
Property Damage Offence	1	2.56	3	14.29
Property Abuse Offences	6	15.38	2	9.52
Administrative	1	2.56	2	9.52
Sexual Offences	6	15.28	2	9.52
Other	10	25.64	6	28.57

Further analysis of the frequency of past offences per disability type was conducted utilising chi-square for independence to examine whether there were any significant differences between disabled and non-disabled offenders (See Table 3.15 To 3.17). There were no significant differences between reading and non-reading disabled offenders on type of past offences committed, χ^2 (8, 60) = 2.50 *n.s.*

Table 3.15. Percentage of past offences committed by reading and non-reading disabled offenders.

	Reading Disabled *n*=33		**Non-reading Disabled *n*=27**	
	n	%	*n*	%
Dishonesty Offences	15	45.45	11	40.74
Drug & Anti-social Offences	7	21.21	6	22.22
Violent Crime	8	24.24	5	18.52
Property Damage Offence	4	12.12	6	22.22
Property Abuse Offences	2	6.06	4	14.81
Administrative	1	3.03	1	3.70
Sexual Offences	1	3.03	0	0
Other	9	27.27	4	14.84

Table 3.16. Percentage of Past Offences Committed by Math and Non-math Disabled offenders

	Math Disabled *n*=51		**Math Non-Disabled *n*=9**	
	n	%	*n*	%
Dishonesty Offences	23	45.10	3	33.33
Drug & Anti-social Offences	11	21.57	2	22.22
Violent Crime	11	21.57	2	22.22
Property Damage Offence	7	13.73	2	22.22
Property Abuse Offences	5	9.09	1	11.11
Administrative	2	3.64	0	0
Sexual Offences	1	1.96	0	0
Other	11	21.57	2	22.22

There were no significant differences between math and non-math disabled offenders on type of past offences committed, χ^2 (8, 60) = 10.91, *n.s.* Furthermore there were no significant differences between oral and non-oral disabled offenders on type of past offences committed, χ^2 (8, 60) = 7.38, *n.s.*

Table 3.17. Percentage of past offences committed by oral and non-oral disabled offenders.

	Oral Disabled *n*=39		**Non-Oral Disabled *n*=21**	
	n	%	*n*	%
Dishonesty Offences	19	48.72	7	33.33
Drug & Anti-social Offences	9	23.08	4	12.90
Violent Crime	9	23.08	4	12.90
Property Damage Offence	8	20.51	4	12.90
Property Abuse Offences	4	10.26	2	9.52
Administrative	2	5.13	0	0
Sexual Offences	1	2.56	0	0
Other	10	25.64	6	28.57

3.2.4. Measure of Malingering

It was found that the mean item recall for the Rey Fifteen Memory Item Test (FMIT) was 12.9 (SD=2.31) items and 4.08 (*SD*=0.91) for row recall. The range of scores were between 6 and 18 items and between 2 and 5 rows. Three percent (*n*=2) of participants recalled scores below the recommended cut-off score of nine items recalled. This finding suggests that as a group there was no indication of malingering; however, given that two subjects scored within the malingering range analyses were run both with and without these participants. It was found that including these participants did not affect the outcome, therefore they were included in the analysis, as when undergoing testing these youth appeared to be highly anxious which may have been the cause of their low scores.

3.3. Behavioural Measures

3.3.1 Attention Deficit Hyperactivity Disorders

The total sample of offenders generally reported scores within 1.5 standard deviations above the mean on measures of symptoms of Attention Deficit Disorders (ADD) (See Table 3.18)

Table3.18. Total responses of mean T-scores on the Conners' Rating Scales.

	M	*SD*	**Minimum Score**	**Maximum Score**
Inattentive Subtype	60.33	10.71	43	84.5
Hyperactive Subtype	58.57	11.52	37	86.5
DSM-IV Total	61.42	12.56	40	88.00

Although the overall group mean was below the recommended cut-off (a T-score above 65 is indicative of a clinical disorder), a number of youth were found to have

significant symptoms of ADHD. It was found that 53.3% (n=32) of the total sample had symptoms of ADHD scores in the clinical range. Further, 48.3% (n=29) had behaviours consistent with ADHD inattentive type, 38.3% (n=23) had behaviours consistent with ADHD hyperactive type, and 33.3% (n=20) had behaviours consistent with the combined type of ADHD. Finally 51.67% (n=31) of the sample met criteria for both ADHD and learning disabilities. Table 3.19 displays the number of participants with and without a learning disability who met criteria for each ADHD subtype, with the percentage of learning disabled and non-learning disabled offenders displaying ADHD symptoms.

Table 3.19. Number and percentage of offenders with/without a learning disability who met criteria for ADHD.

	Reading		**Maths**		**Oral Language**	
	Disabled (n=33)	**Non-disabled** (n=27)	**Disabled** (n=51)	**Non-disabled** (n=9)	**Disabled** (n=39)	**Non-disabled** (n=21)
Inattentive	16 (48.48%)	13 (48.48%)	26 (50.98%)	3 (33.33%)	21 (53.85%)	8 (38.10%)
Hyperactive	10 (30.30%)	13 (48.48%)	19 (37.25%)	4 (44.44%)	14 (35.90%)	9 (42.86%)
DSM-IV Total	16 (48.48%)	16 (59.26%)	27 (52.94%)	5 (55.56%)	22 (56.41%)	10 (47.62%)

When groups were divided into learning disabled and non learning disabled offender groups, a t-test found no significant difference in mean T-scores on the Conners Rating Scales (See Table 3.20). Given the small number of participants in the non-learning disabled group, effect sizes were measured, the medium to large effect sizes indicate that the learning disabled group are reporting more symptoms of all ADHD subtypes than the non-learning disabled offenders.

Table 3.20. Mean T-Scores on combined Conners' Rating Scales (both age groups) for learning disabled and non-learning disabled youth.

ADHD Type	Learning Disabled (n=55)		Non Learning Disabled (n=5)		t	d
	M	*SD*	*M*	*SD*		
Inattentive	60.99	10.75	53.10	7.71	1.60	0.84
Hyperactive	59.00	11.61	53.87	10.33	0.95	0.47
DSM-IV Total	62.05	12.36	54.43	9.41	1.34	0.69

Note: * = $p < .05$; ** = $p < .01$

To further analyse the relationship between learning disabilities and ADHD, specific learning disabilities were examined (See Table 3.21). A MANOVA was conducted to investigate whether there was a difference in the mean T-scores on the Conners' Rating Scales based on the individuals learning disability subtype. There was no significant difference between the subtypes of ADHD for reading disabilities, F (3,56)=0.97 *n.s.* or math disabilities, F (3,56)=0.93 *n.s.* However, there was a significant difference in ADHD subtype for oral language disabilities, F (3,56)= 0.84 p <.01; however, none of the univariate analysis were found to be significant (See Figure 3.4).

Table 3.21. Mean T-Scores on combined Conners' Rating Scales (both age groups) for youth, a breakdown as per learning disability type.

	RD (n=33)		NRD (n =27)		MD (n =51)		NMD (n =9)		OD (n =39)		NOD (n =21)	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Inatt	60.52	11.54	60.98	9.79	60.61	10.42	58.76	12.78	61.80	10.13	57.61	11.45
Hyper	57.65	11.44	59.70	11.74	57.97	11.04	61.96	14.22	57.84	11.08	59.92	12.46
DSM	61.03	13.09	61.89	11.39	61.26	11.99	62.33	14.44	61.86	11.74	60.60	13.43

Note: Inatt = Inattentive ADHD subtype; Hyper = Hyperactive ADHD subtype; Total = DSM=DSM-IV-TR; RD = Reading Disability; NRD = Non-reading Disabled; MD = Maths Disability; NMD = Non-math Disabled; OD = Oral Disability; NOD = Non-oral Disabled.

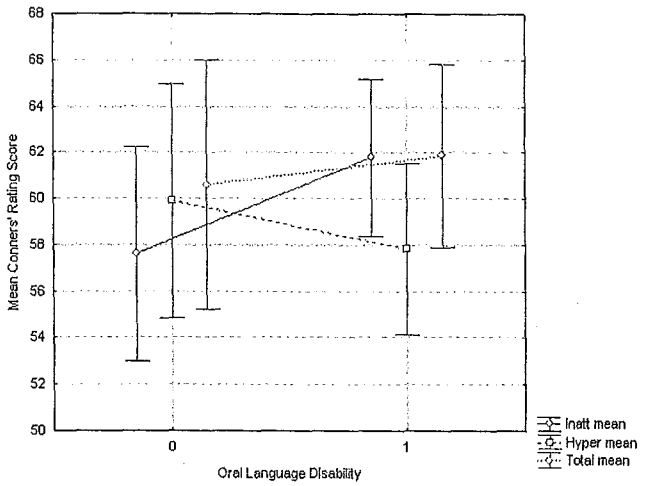


Figure 3.4. Mean T-Scores for all ADHD subtypes for oral language learning disabled and non-oral language learning disabled offenders.

In contrast to finding using the Conners' Rating Scales, parents reported that 17.39% (n=8 out of 46 respondents) of children had been diagnosed with ADHD by mental health experts prior to this study. On the Conners' Rating Scales DSM-IV Total score, the mean T-score for these eight youth was 59.65 (SD=10.08), on the measure of inattentive ADHD there was a mean T-score of 58.60 (SD=7.23), and on the measure of hyperactive ADHD there was a mean T-score of 58.37 (SD=11.51).

3.3.2 Relationship Between ADHD and Learning Disabilities

A correlation matrix was used to examine the relationship between mean scores on the WIAT-II subtests of learning disabilities and T-scores on the Conner's measure of ADHD, the analysis found no significant correlations between these variables (See Table 3.22) this suggests that no relationship was found between having ADHD symptoms and learning difficulties.

Table 3.22. Correlations between mean Conners T-Scores for ADHD subtypes and WIAT-II composite and average scores.

	Average Reading	Math Composite	Oral Language Composite
Inattentive Subtype	-0.00	-0.05	-0.22
Hyperactive Subtype	0.17	0.12	0.02
DSM-IV Total	0.09	0.03	-0.10

Note: * = $p < .05$; ** = $p < .01$

3.4 Measures of Psychopathology

3.4.1 Brief Symptom Inventory

As a group, this sample of youth generally reported low mean scores on the Brief Symptom Inventory (BSI: See table 3.23).

Table 3.23. Descriptive statistics for all participants (n=60) on the BSI.

Scale	*M*	*SD*	Minimum Score	Maximum Score
Somatisation	48.87	11.14	36	75
Obessive-Compulsive	54.98	9.35	33	72
Interpersonal Sensitivity	48.15	10.59	35	74
Depression	49.40	10.21	35	78
Anxiety	50.57	11.04	35	80
Hostility	51.83	9.02	34	75
Phobic Anxiety	50.78	10.87	40	74
Paranoid Ideation	51.58	11.17	32	80
Psychoticism	52.67	10.11	37	72
Global Severity Index	50.97	10.90	30	77
Positive Symptom Total	50.62	11.01	31	71
Positive Symptom Distress Index	52.13	9.08	35	73

A MANOVA was conducted on T-scores of the BSI to determine if there was a difference between learning and non learning disabled offenders scores on this measure (See Table 3.24). The overall MANOVA was not significant F (12,47) = 0.88 *n.s*, and consequently the univariate analyses were not interpreted.

Further MANOVA's were conducted to determine if there was any difference between mean scores on the BSI when grouped by learning disability type (See Table 3.25). Again, it was found that there was no statistical difference between subjects who met criteria for reading, F (12,47) = 0.47 *n.s*, maths, F (12,47) = 1.04 *n.s*, and oral language, F(12,47) = 0.50 *n.s* disabilities and those who did not meet criteria.

Table 3.24. Descriptive statistics for learning disabled and non-learning disabled offenders on the BSI.

Scale	Learning Disabled (*n*=55)		Non-Learning Disabled (*n*=5)	
	M	*SD*	*M*	*SD*
Somatisation	49.2	10.8	45.0	15.2
Obesssive-Compulsive	54.9	9.4	55.8	9.2
Interpersonal Sensitivity	47.7	10.4	53.2	12.6
Depression	49.6	10.4	47.4	8.3
Anxiety	50.3	11.2	53.4	10.0
Hostility	52.1	9.2	49.0	7.3
Phobic Anxiety	50.7	11.0	52.0	11.0
Paranoid Ideation	51.5	11.2	52.6	12.7
Psychoticism	52.8	10.1	50.4	10.7
Global Severity Index	51.0	10.9	50.2	11.7
Positive Symptom Distress Index	52.3	9.1	50.6	10.0
Positive Symptom Total	50.7	11.1	50.0	11.5

To determine if there was any difference between BSI scores for participants with ADHD symptoms and without ADHD symptoms a MANOVA was conducted,

F (12,47) = 1.74, *n.s.* It was found that there was no significant difference between the two groups. When this was further divided into Inattentive ADHD symptoms there was a significant difference, F (12,47)=2.30, $p<0.05$. The univariate test showed that the Obsessive Compulsive subscale was significantly different between the two groups; however, it has been found that the Obsessive Compulsive scale is highly correlated with inattentive ADHD (Rucklidge & Tannock, 2001). A MANOVA was also conducted to examine if there was a difference between subjects with symptoms of Hyperactive ADHD and those without, no difference was found F (12,47)= 1.28, *n.s.*

Table 3.25. Descriptive statistics by learning disability subtype on the BSI.

	RD (n=33)		**NRD** (n =27)		**MD** (n =51)		**NMD** (n =9)		**OD** (n =39)		**NOD** (n =21)	
	M	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***
SOM	47.42	10.74	50.63	11.57	49.0	10.61	48.22	14.55	49.51	10.77	47.67	11.98
O-C	54.18	8.03	55.96	10.82	55.1	9.50	54.56	8.92	55.08	8.91	54.81	10.34
I-S	47.24	10.12	49.26	11.23	47.5	10.12	52.11	12.87	48.54	10.10	47.43	11.66
DEP	48.48	9.72	50.52	10.87	49.3	10.15	50.00	11.20	50.10	10.20	48.10	10.36
ANX	50.12	11.20	51.11	11.04	49.5	10.73	56.89	11.26	49.92	10.76	51.76	11.73
HOS	51.15	9.23	52.67	8.85	51.3	8.76	54.78	10.40	51.64	9.16	52.19	8.96
PHOB	49.84	10.73	51.93	11.14	49.8	10.30	56.22	13.01	50.92	10.55	50.52	11.72
PAR	50.21	11.05	53.26	11.30	50.6	10.94	56.89	11.63	51.13	10.96	52.43	11.78
PSY	51.72	10.46	53.59	9.78	52.1	9.89	55.44	11.49	53.03	9.88	51.71	10.73
GSI	49.85	10.16	52.33	11.80	50.3	10.56	54.67	12.76	51.08	10.50	50.76	11.89
PST	52.21	9.14	52.04	9.18	51.5	8.80	55.44	10.47	52.03	8.92	52.33	9.60
PSDI	49.79	10.56	51.63	11.65	50.3	11.01	52.56	11.47	51.18	11.07	49.57	11.09

Note: SOM = Somatization; O-C = Obsessive-Compulsive; I-S = Interpersonal Sensitivity; DEP = Depression; ANX = Anxiety; HOS = Hostility; PHOB = Phobic Anxiety; PAR = Paranoid Ideation; PSY = Psychoticism; GSI = Global Severity Index; PST = Positive Symptom Total; PSDI = Positive Symptom Distress Index

3.4.2 Conners' Rating Scales

Participants 17 years and younger completed the Adolescent version of the Conners' Rating Scale, this version of the scale has a number of measures that the Adult Conner's Rating Scale does not measure. Therefore, only the Adolescent version is reported. Of note is the number of respondents, all adolescents in this age group completed the questionnaire, but data from parents and teachers were missing. As a group it was generally reported that participants had few problems identified by the Adolescent Conners' Rating Scales (See Table 3.26).

Table 3.26. Summary of descriptive statistics for Conners' Rating Scales, for youth 17 years and younger.

	Adolescent Self Report (*n*=25)		**Parent Rating Scale** (*n*=22)		**Teacher Rating Scale** (*n*=14)		**Average Across Raters**	
	M	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***
Family Problems	51.24	10.30	-	-	-	-	51.24	10.30
Emotion Problems	51.72	10.78	-	-	-	-	51.72	10.78
Conduct/Opposition	69.44	12.33	67.72	14.25	65.28	16.90	67.32	11.07
Cognitive	60.20	10.19	62.45	12.83	60.00	13.29	60.44	8.74
Anger	53.72	10.57	-	-	-	-	53.72	10.57
Hyperactive	49.56	9.55	66.95	19.06	55.28	14.25	56.25	11.44
Anxious	-	-	60.91	16.40	52.36	11.36	58.12	13.95
Perfectionism	-	-	52.36	13.06	46.71	17.11	50.92	11.47
Social Problems	-	-	62.59	15.77	52.21	7.62	59.22	13.33
Psychosomatic	-	-	54.95	13.15	-	-	54.95	13.15
ADHD Index	56.04	11.38	64.04	16.18	57.07	16.44	58.24	10.77
Emotional Lability	-	-	65.41	17.28	61.78	19.08	64.08	16.57
Restless-Impulsive	-	-	69.32	18.30	56.71	15.86	63.06	14.92
Global Total	-	-	71.09	18.29	59.07	17.70	65.44	15.81
DSM Inattentive	57.96	13.90	61.14	15.59	52.64	18.63	60.33	10.71
DSM Hyper-Impulsive	54.84	8.85	65.45	17.72	59.07	16.34	58.57	11.52
DSM Total	58.24	9.70	64.77	18.09	57.71	17.21	61.42	12.26

All scores on the Conners' Rating Scales were below the recommended clinical cut-off, with the exception of the Conduct/Oppositional scales, for which the mean T-score was 67.32. This suggests that on average this group scored in the clinical range on measures of Conduct/Opposition, and considering the population sample, this result is expected.

3.5 Measure of Predicted Re-offending

A number of parents (n=9) were unable to be contacted, or did not wish to complete the Risk Screen for Youth Offenders (ITAC), therefore the following data is based on scores from 51 offenders. The scores on the Reliability scale indicate that overall the information gained was reliable, mean 4.70 (SD=1.65), although 13 cases did have low validity. Analyses were run both with and without this group to determine if there was a difference in significance; however, none was found. The measure of Childhood Disruptive Behaviour had a mean of 9.76 (SD=6.56). The measure of Delinquency had a mean of 12.94 (SD=5.52), and the measure of Teenage Crime had a mean of 13.20 (SD=4.50). The Total Risk Score had a mean of 35.90 (SD=13.41). The Total Risk Score was then converted into a Probability of Reconviction in the next 12 months, resulting in a mean of 48.39 (SD=14.96). In other words on average these youth have a 48.39% chance of re-offending in the following 12 months (See Figure 3.5 for the distribution of these scores).

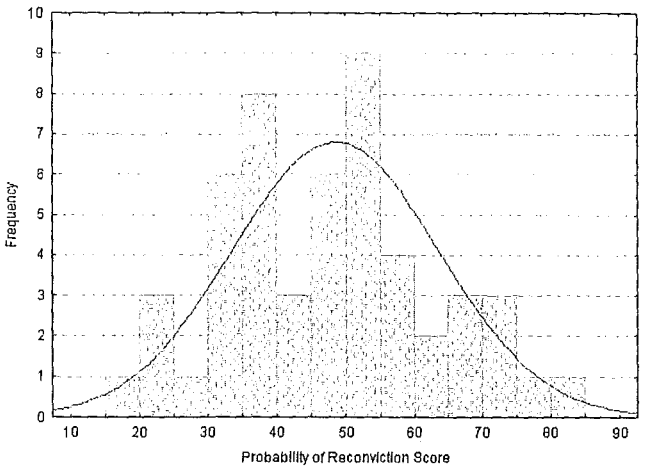


Figure 3.5. Distribution of probability of reconviction scores.

A comparison of Probability of Reconviction Scores between subjects with various disability types was made (See Table 3.27). The differences were analysed using a *t*-test and this showed that, there were no significant differences between the groups. This suggests that having a disability does not increase one's likelihood of reoffending in the next twelve months. In addition to determining if there was a difference in Probability of Reconviction scores per learning disability subtype, effect sizes for the differences were calculated. These showed a moderate effect between learning disabled offenders and non-learning disabled offenders scores of the ITAC.

Table 3.27. ITAC Scores for learning and non-learning disabled offenders by disability type (n=51).

	ITAC Scores for LD Offenders			**ITAC Scores for NLD Offenders**			*t*	*d*
	M	***SD***	***n***	***M***	***SD***	***n***		
Reading Disability	49.63	16.38	27	47.0	13.41	24	0.62	0.18
Maths Disability	48.19	14.39	43	49.50	18.88	8	-0.22	-0.08
Oral Language Disability	47.97	15.74	33	49.17	13.83	18	-0.27	-0.08
Any Learning Disability	49.30	14.86	46	40.00	14.78	5	1.33	0.63

Note: * = $p < .05$; ** = $p < .01$

There was no correlation found between individuals scores on the WIAT-II and any of the Scales on the ITAC, which indicates there is no relationship between the presence of a learning disability and risk of reconviction (See Table 3.28). However, this finding is likely to be a result of the low number of offenders with no learning disability.

Table 3.28. Pearson Coefficients between ITAC scores and composite/average scores on the WIAT-II (n=51; cases with low validity removed).

	Scale 2	**Scale 3**	**Scale 4**	**Total**	**Probability of Reconviction**
Reading Average Score	-0.14	0.04	-0.10	-0.09	-0.09
Maths Composite	0.09	-0.06	0.00	0.02	0.04
Oral Language Composite	-0.09	-0.08	-0.10	-0.11	-0.07

Note: * = $p < .05$; ** = $p < .01$; Scale 2=
Childhood Disruptive Behaviour; Scale 3=Delinquency; Scale 4=Teenage Crime

Analysis was conducted both with and without cases with little validity (i.e. scores below 4). However, to ensure that the results are as valid as possible, only those cases with validity 5 and above are used (n = 38). The ITAC Probability of Reconviction scores were found not to correlate with Conduct /Oppositional scores on the Conners' Rating Scales (r = 0.38, *n.s.*). Correlation coefficients were examined between scores on the ITAC scales and Probability of Reconviction Score and ADHD by subtype (See Table 3.29) and this showed a correlation between ADHD hyperactive subtype and the a number of measures on the ITAC including Probability of Reconviction scale.

Table 3.2.9. Pearson coefficients between ITAC scores and ADHD subtypes (with cases with low validity removed).

	Scale 2	**Scale 3**	**Scale 4**	**Total**	**Probability of Reconviction**
Inattentive	0.23	0.17	0.25	0.25	0.22
Hyperactive	0.33*	0.20	0.38*	0.35*	0.33*
DSM-IV Total	0.28	0.17	0.32	0.29	0.27

Note: * = $p < .05$; ** = $p < .01$; Scale 2=Childhood Disruptive Behaviour; Scale 3=Delinquency; Scale 4=Teenage Crime

4.0. Discussion

4.1. Summary of Results

The primary aim of this study was to determine the prevalence of learning disabilities in young offenders aged between 16 to 19 years, incarcerated within New Zealand youth prisons. The secondary aims were to determine the impact of having a learning disability on the predicted likelihood of re-offending, when learning disability occurs alone, and when it is present with other co-morbid conditions. The results clearly indicate that learning disabilities are over represented within this population, within the discussion each hypothesis is addressed before concluding with general discussion on implications, limitations and future research.

4.1.1. Prevalence of Learning Disabilities

The main purpose of this study was to obtain an estimate of the prevalence of learning disabilities in an offending population in a New Zealand sample. It was expected that youth in a prison population would have higher rates of learning disabilities than the general population; however, the extremely high rates that were found were unexpected. The majority (91.67%) of these youth had at least one learning disability as defined by having at least one composite score on either reading, arithmetic or oral language one standard deviation below the mean on standardized tests of learning. This was particularly unexpected as the criteria used to measure learning disabilities involved using composite scores or averaging across four subtests. This criterion is considered to be extremely stringent in comparison to other research that generally uses either one subtest or less structured measurement techniques to identify learning

disabilities (Shaywitz, 1995). To the researchers knowledge, this is the first study to document such a high prevalence of learning disabilities in any group of offenders.

Estimates of learning disabilities in New Zealand amongst a school aged population range between approximately 7-15% (Chapman, 1992). This does not provide a direct comparison group, therefore limited conclusions can be drawn; however, it does provide a base from which to gauge the results of this study. This informal comparison suggests that the problem of learning disabilities is more apparent in prison populations than the general population of New Zealand.

This research supports international studies that report higher rates of learning disabilities in offending populations; however, the estimates from these studies are within the range of 12 to 70 percent, with the most commonly reported falling in the range of 30 to 50% (Brier, 1989). Possible reasons for the difference in prevalence between international research and this current study may be related to the measurement of learning disabilities. This current study investigated three types of learning disabilities (reading, mathematics, and oral language), which is more comprehensive than other studies that limit research to one specific learning disability. Therefore, the comprehensive nature of the study makes it more likely that participants would be identified with a specific learning type. A further reason for the extremely high prevalence rates could be the choice of achievement tests, while this was considered the best test available, it does not have normative information for a New Zealand sample. Finally, as discussed in the introduction, researchers tend to use different criterion for defining a learning disability, making comparisons across studies more inherently difficult. For example, in the (Malmgren, et al., 1999) study,

they used an IQ-achievement discrepancy approach, whereas in this study, a low achievement approach was used. However, given the stringent criteria used in this study, one would have expected the prevalence rates to be lower than for other studies. Other researchers have determined learning disabilities using only one subtest on measures of achievement such as, (Dishion, et al., 1984), who used the one reading subtest on the Wide Range Achievement Test (WRAT).

The prevalence of specific types of learning disabilities present in incarcerated youth was also examined. It was found that the majority of participants had a math disability (85%), followed by an oral language disability (65%) then reading disability (55%). This result is in direct contrast to the international literature in which reading disabilities are the most prevalent specific learning disability type with the DSM-IV-TR indicating that four out of five individuals with learning disabilities will have a reading disability (Association, 2000). However, preliminary data from research currently being undertaken in New Zealand has found, amongst youth aged 13-17 years, that maths disability is the most prevalent at approximately 15% (Rucklidge, 2004). Overall, the youth from this study are performing at the 14th percentile for reading and oral language, which means they are performing below 86% of their same age peers. For maths these youth are performing at the 2nd percentile, which means they are performing below 98% of their same age peers.

Of further interest was the large number of youth that suffered from difficulties with reading comprehension (approx 82% had a standard score below 85). In comparison to results on other subtests on the Wechsler Individual Achievement Test –

Second Edition (WIAT-II) this subtest had the largest percentage of youth that scored under 85. It was apparent during the formal testing that the youth had particular difficulties with this section, with subjects often finding their grade level too difficult, which led to them reading below their grade level. This result is in contrast to findings reported by (Chapman, Tunmer, & Allen, 2003) that indicate amongst 11 year olds, that 7.1% had difficulties with reading vocabulary but only 5.8% had difficulties in reading comprehension. There is no immediate explanation for this finding; however, it is important that this level of difficulty was identified, it suggests that the majority of incarcerated youth struggle comprehending any type of written language.

In examining the mean scores for learning disabled and non-learning disabled offenders across each specific learning disability type, further evidence of difficulties were noteworthy. On both the numerical operation and reading comprehension subtests, the mean for non-learning disabled offenders was below a standard score of 85. This indicates that whilst not all youth meet the strict criteria for a learning disability there is evidence of skill deficits that influenced the achievement score.

4.1.2 Learning Disabilities and Psychopathology

Research using a normal population has indicated a higher prevalence rate of psychopathology in individuals with learning disabilities than individuals without such disabilities (Handwerk & Marshall, 1998; San Miguel, et al., 1996). Given these findings it was expected that participants from the current study, with learning disabilities would report psychiatric symptoms in the clinical range as compared with non-disabled offenders. This hypothesis was not supported, as there was no overall difference between offenders with a learning disability and those without,

on a self-report measure of psychiatric symptoms. Furthermore, the overall scores for offenders were clustered closely around the mean, suggesting little variability in the scores across participants.

This result was unexpected particularly given the high correlations between depression and learning disability previously reported (Jackson, et al., 1987; Roman, 1998)). However, clinicians working with adolescents have long noticed the under-reporting by adolescents of any difficulties they may be experiencing (Sattler, 2002). This denial of any symptomology may explain the low scores on the Brief Symptom Inventory (BSI).

A further possible explanation for the lack of depressive symptoms could be due to the self-perceptions these youth have. (Heath & Wiender, 1996) stated that in youth with learning disabilities, depression is mediated by self-perceptions of social acceptance by peers, therefore if the learning disabled youth believes themselves to be accepted by their peers, depression is less likely to develop. The findings in this current study could be indicative that the youth feel accepted by other youth within the prison. Given that the youth effectively are living in a small isolated community with individuals similar in many ways to themselves (e.g. similar academic achievement and a history of criminal behaviour), this could lead to a greater social acceptance than if they were living in society.

Other interpersonal, behavioural and psychopathological problems were measured by the Adolescent Conners' Rating Scale (for youth 17 years and younger). The only scale that indicated significant impairment was that of conduct disorder and

oppositional behaviour, which would be expected given the sample population. All other measures were within 1.5 standard deviations of the mean, which suggests there may be impairment, but this is not considered to be in the clinical range. Most notable was the subscale measuring emotional lability, which closely approached the clinical range. This scale suggests that individuals may have low self-esteem and minimal self-confidence, feel lonely and isolated, and may worry more than others their own age (Conners, 1997). However, it is worth noting that this scale is completed only by parents and teachers, not the adolescent themselves.

The lower than expected prevalence of any psychopathology and interpersonal problems may extend from the high rate of difficulties these youth experienced in regards to reading comprehension. As discussed, the subtest that the highest number of youth performed poorly on was reading comprehension. The obvious deficits in comprehending written language may have led to these youth not clearly understanding the questionnaires, and therefore not responding accurately. Although participants were given the opportunity to ask questions, they may not have felt comfortable doing so.

4.1.3 Learning Disability and Attention Deficit Hyperactivity Disorder

It was hypothesised that subjects with learning disabilities would have more symptomology of ADHD than non-learning disabled subjects. This result was not supported; however, given the small number of participants who did not have a learning disability this finding is not unexpected. It was found that approximately half the participants had symptoms of ADHD, of which 51.67%of the sample also had a learning disability. ADHD inattentive subtype was the most common, with almost

half of the ADHD group displaying behaviour consistent with this subtype. Approximately one third of participants had behaviour consistent with ADHD hyperactive subtype, and a further third had both inattentive and hyperactive symptoms. The findings from this research is consistent with other research that suggests approximately 50% of individuals with a learning disability will also have an attention problem (Cantwell & Baker, 1991). In addition previous research reported learning disabilities to co-occur more often with the inattentive subtype of ADHD than the hyperactive subtype (Maynard, et al., 1999).

No difference in the prevalence of ADHD symptoms was found between participants with a learning disability and those without; however, given the small number of youth without a learning disability, this hypothesis could not be adequately tested. It was found that 51.67% of the sample met criteria for both a learning disability and ADHD symptomology, only one subject (1.67%) had ADHD without meeting criteria for a learning disability. Research in New Zealand has identified conviction rates for youth with no disorders to be 12.6%, with conviction rates for youth with ADHD being as high as 23.5% (Moffitt, 1990). (Vreugdenhil, Doreleijers, Vermeiren, Wouters, Luuk, & vander Birk, 2004) reported the prevalence of incarcerated youth with ADHD to be 9%, which is much lower than the current findings, this could be a cultural factor, given their sample was based in the Netherlands. A study based in a Swedish borstal for advanced juvenile delinquents found that 68% of youth had ADHD during pre-school and/or school years (Dalteg & Levander, 1998).

4.1.4 Predicted Rates of Re-offending

It was hypothesised that offenders with a learning disability will have a higher score of Probability of Reconviction within the next twelve months than offenders without a learning disability as measured by the Risk Screen for Youth Offenders (ITAC). No difference was found between participants with a learning disability and those without; however, this lack of a difference is likely to be due to the unexpectedly small comparison sample of subjects with no learning disability. It was found that on average youth had almost a 50% chance of re-offending in the next 12 months. This is consistent with the literature that reports that 50% of youth offenders will be re-imprisoned within two years (Department of Corrections, 2002). Furthermore, when comparisons were made between learning disabled and non-learning disabled offenders that scored at the extremities on the ITAC (lower than 40 and higher than 60) no difference was found. However, when examining the effect size there was a moderate effect for any learning disability and ITAC scores, suggesting that there may be a difference between the learning disabled and non learning disabled offenders, however sample size was impeding the ability to detect a difference.

The development of the ITAC is still in infancy, therefore little is known about the psychometric properties of the measure, more research is required to determine the validity and reliability, and comparisons with other well-developed measures of predicted re-offending. While at a group level the group predictions are similar to what would be expected, it is unclear from this study if the measure is actually detecting offenders that will go on to re-offend at an individual level.

4.1.5 Learning Disabilities, ADHD and Re-Offending

It was hypothesised that if symptoms of ADHD were present and criteria for a learning disability was met, predicted rates of re-offending would be higher for these youth, than youth with a learning disability without ADHD and non-learning disabled offenders. Given the small comparison sample of individuals no difference was found between the three groups. However, a relationship was found between scores on the Risk Screen for Youth Offenders (ITAC) and the hyperactive subtype of ADHD on the Child Disruptive Behaviour, Teenage Crime, Total, and Probability of Reconviction scales. Given that a number of questions on the ITAC ask directly about symptomology of hyperactive ADHD this result is expected. Furthermore, research suggests that AHDH is a risk factor for delinquent behaviour (Waschbusch, 2002). (Gresham, Lane, & Lambros, 2000) argued that youth with both ADHD hyperactive subtype and conduct disorder are at risk for being what he refers to as a "fledgling psychopath" which leads to life time prevalent antisocial behaviour. Given the high risk for youth with both conditions, more research is required to examine the prevalence of the two conditions within New Zealand prisons.

4.2 Theory

Evidence from the present study suggests that each of the theories discussed earlier has specific merits. However, given that this research did not seek to support or oppose these theories only small facets of each can be addressed in response to the current findings.

Patterson and colleagues (1989) contend that the steps to delinquency start with poor parental management which can lead to conduct problems. Unfortunately, not enough

is known about the home environment of the youth involved in this research; however, there is evidence to suggest a high prevalence of conduct problems within this population.

An assumption of the *Susceptibility Hypothesis* contents that neurological and intellectual deficits place a child with a learning disability at risk for becoming delinquent. This is mediated by problems with impulse control, attention, judgement and comprehension problems (Brier, 1989). In the current study a large number of offenders had comorbid ADHD, of which one side effect is poor impulse control and an inability to maintain attention, yet there were also a number of youth who had learning disabilities but no symptoms of ADHD. However, inline with Brier's (1989) hypothesis the susceptibility could be a neurological assault such as a head injury, as a large number of youth, including those without ADHD symptomology, reported loss of consciousness as a consequence of head trauma. Thus, there is an indication that some of the variables involved in the susceptibility hypothesis are supported by the current findings.

The School Failure Hypothesis postulates that academic failure leads to acting out in school, which in turn leads to delinquency. The present study found that there were high rates of early school leavers among adolescent offenders. Furthermore, a number of parents reported that behavioural problems were evident from early childhood. Both of these findings are consistent with the School Failure Hypothesis; however, like other studies the present study does not clarify which comes first, the learning or behavioural difficulties.

In sum, correlational results from this research indicated that there may be a relationship between a number of variables, which interact with learning disabilities and together contribute to the development of delinquent behaviour and offending. Furthermore, the overlap between them warrants experimental data to further to support these findings.

4.3 Clinical Implications

4.3.1 Prevention Implications

Given the high prevalence of learning disabilities in New Zealand youth prisons, one could argue that the current approach to education is not working for some sections of society. A review of the education system in New Zealand can be read in (Chapman, et al., 2003); however, there are pertinent issues that merit discussion within the context of this research. Identification of young people with learning difficulties has traditionally relied on the teacher identifying such issues, and when identified the student may get remedial assistance. However, there have traditionally been small numbers of these tutors and training has been limited, both in amount of training and subjects covered. Furthermore, remedial services now include the mandate of behavioural management, thereby limiting time that can be spent getting these youth up to speed (Chapman, et al., 2003). If youth are unable to be managed within the educational system, they can seek private assistance; however, this is often costly. Given that the literature recommends early identification and treatment of learning disorders for a better prognosis (Vellutino, et al., 2000), this is concerning. Furthermore, as has been discussed academic achievement is an important link to

delinquency so by giving early mastery experiences may prevent the negative long-term outcomes.

4.3.2 Treatment Implications for Incarcerated Youth

Young offenders within New Zealand are not generally responsive to intervention programmes, with young offenders (17-25 years) being the most likely to engage in future re-offending (Zampese, 1997). The results from this current study indicate that most youth currently in prison have at least one specific learning disability. The difficulties that individuals with learning disabilities encounter hinder their ability to understand and process information. When developing an intervention program to target risk factors of re-offending, the capabilities of these learning disabled offenders should be considered.

The specific skill deficits and difficulties vary within each of the specific learning disabilities, for instance; among other difficulties, individuals with maths disabilities can experience difficulties processing problems and are often inaccurate or slow in problem solving. They also have problems with working memory, which ensures they have difficulty holding information in their memory while trying to develop strategies to problems (Geary, 1993). Individuals with oral language disabilities tend to have difficulty expressing and comprehending language, which disrupts the effective communication processes, and makes following instructions difficult. This often gives the communicator the impression that these individuals do not hear instructions, are confused or are not attentive (APA, 2000). Individuals with reading disabilities are likely to have difficulties with cognitive processing, visual perception, linguistic process, attention and memory difficulties (APA, 2000). Having an understanding of

these limits ensures that information can presented in a manner that is most efficacious.

Consideration should be given to the methods used to present the current intervention programs, as they should be flexible to cater for the various specific learning deficits. For instance, many intervention programs are based on a cognitive-behavioural model that can be difficult for people with cognitive and comprehension difficulties. Based on these results, more support is provided for programs that focus on skills and skill deficits, are matched to the needs and learning styles of participants (Collingwood & Genthner, 1980; as cited in (Brier, 1994). Methods of improving treatment programs include presenting information in small chunks, giving offenders time to process information, presenting information using all mediums such as orally, visually, written and diagrammatically. There is evidence that targeted intervention can reduce recidivism in offenders with learning disabilities.

Brier (1994) found a reduction in recidivism occurred in adjudicated youth with learning disabilities. The targeted treatments involved psychosocial, educational and vocational interventions. Academic remediation involved structured tasks in reading, arithmetic and communication skills. There were also modules focused on improving the youth's problem solving skills, social and moral reasoning and improving their ability to evaluate their own learning strengths and needs. Vocational training included job searching techniques, social skills, communication and career decisions. Twenty months following treatment completion, scores on academic achievement tests had significantly increased for reading and arithmetic but not spelling, and psychopathology scores had decreased significantly. Moreover, the recidivism rate for

learning disabled offenders who completed the program was less than half the recidivism rates of subjects who did not complete the program (Brier, 1994).

The impact of ADHD on the ability to engage in programs should also be considered when designing and implementing treatment programs. As noted, approximately 50% of youth in prison suffer from significant symptoms of ADHD, particularly the inattentive type. If youth are not able to attend, this reduces the likelihood that they will not be able to benefit from the treatment program. It is recommended that treatment programs include methods that assist these youth in maintaining their concentration, such as reducing stimulation in the environment, more one on one assistance, and taking regular breaks.

4.4. General Limitations

This section provides a discussion of factors that may impact upon the findings of this investigation, and will then focus on future research that may address these issues.

The major limitation of this research is the lack of a substantial comparison group, from which to compare learning disabled and non learning disabled offenders. Given the prevalence rates of learning disabilities in international studies it was expected that similar results would be found in the context of a New Zealand youth prison. If the prevalence of learning disabilities had been comparative to those found overseas, this would have ensured there was a comparison group of offenders without learning disabilities. However, as the number of youth who met criteria for a learning disability surpassed expectations, no such comparison group was available, limiting the amount of meaningful data that could be extrapolated from the results. Moreover,

comparisons were made between offenders who had specific learning disabilities and those who did not have that specific disability type (e.g. reading disabled offenders compared with non-reading disabled offenders). While this technique allowed comparison between two groups, it is worth mentioning that the non-specific learning disabled groups (e.g. non-reading, non-maths, and non-oral language) would have included a significant number of participants that had other learning disability types, inherently limiting the meaningfulness of the comparisons.

The rates of learning disabilities amongst youth offenders in New Zealand was found to be substantially higher than reported from international studies, even given the strict criteria used. Given this, possible causes for this surprising result are discussed. The WIAT-II is considered to be a robust measure of learning disabilities; however, it is normed on an American population with no norms currently available for a New Zealand sample. Furthermore, over 50% of the participants were identified as Maori, given that Maori are indigenous to New Zealand, they would not have been well represented in the normative sample. It is suggested that when investigating achievement across countries, students are more likely to answer correctly if they have been taught the specific material, and have been frequently exposed to the format (O'Leary, 2002). Therefore, the format and context of the psychometric test may have been unfamiliar to the students, resulting in lower scores.

Caution must be exerted when considering these results and how they may be applied to a clinical population. While many authors advocate for a low achievement approach to diagnosing learning disabilities, (e.g.Shaywitz et al., 1992; Siegel, 2003), the official diagnostic manual the DSM-IV-TR recommends diagnosis by the

discrepancy approach (as previously discussed) (APA, 2000). However, the approach taken for identification of learning disabilities should be irrelevant in that if a student requires assistance to ensure they reach their maximum academic achievement, it should be made available.

The population used in this study were young incarcerated men; therefore, transference of this information to other settings is limited. It is expected that the prevalence of learning disabilities should be similar across different age groups of male prisoners; however, as no information was gathered on the female prisoners, it is recommended that this information not be generalised to women. This is particularly pertinent as research indicates that there is a higher prevalence of learning disabilities in males (Shaywitz, et al., 1990). A further concern for generalisation is the issue of culture, within this study there were two dominant cultures, yet New Zealand is a multi-cultural society.

Given the prevalence of conduct and oppositional behaviour in this group, the issue of malingering should be considered. Although the researcher attempted to control for any possible malingering by the offenders, it is still possible that youth feigned responses by not performing at their peak level, or giving untruthful responses on questionnaires. However, clinical impressions indicate that this did not occur, as youth often took considerable time to respond and appeared to be motivated towards the testing. Nonetheless, given this limitation, one should interpret the results with caution, until this research can be replicated.

Caution should be taken when interpreting the results on prevalence rates of ADHD. For the purpose of this research the Conners' Rating Scales were used to assess the symptomology of offenders; however, this measure can not be used for diagnostic purposes. Currently there are no self-report psychometrics that are able to confirm a diagnosis of ADHD, confirmation of a diagnosis must be completed through interview by trained clinicians (Rucklidge & Tannock, 2002). Given the training of the researcher, time constraints and difficulty contacting parents this was not possible; however, future research could address this concern.

A further concern is the lack of information available on some individuals. A number of parents/caregivers were unable to be contacted or were unwilling to be involved in some, or all aspects of the research. This substantially limited the comparison data for a number of measures, resulting in smaller sample sizes and restrictions in analysis. Ideally, complete information for all participants in future research would ensure more accurate comparisons.

4.5. Future Research

This current research provides valuable information on difficulties that may impact on the life of youth in New Zealand prisons. It provides a launching pad for further research opportunities in a domain where relatively little is known. Future research could take a number of directions, at either the level of treatment or prevention.

To establish the effects of learning disabilities on rates of re-offending within New Zealand, it would be pertinent to investigate the outcomes for youth identified with a learning disability. This could be undertaken using longitudinal research that follows

the progress of these learning disabled offenders. Furthermore, programmes currently available for youth offenders are reporting negative outcomes (Zampese, 1997). Therefore a specific learning disabled focus programme could be implemented and outcome comparisons made.

The importance of early intervention for children with learning disabilities has been noted. To improve outcomes for these children it would be advantageous to look at the impacts of early intervention on future delinquent behaviour.

The research was conducted on young male prisoners incarcerated in New Zealand youth prisons. This is a very specific sample, which limits the transferability of these results to other populations. Future research could investigate if these results remain constant across variables such as gender and age. Furthermore, it would also be pertinent to investigate if the prevalence of learning disabilities remains constant across severity of offending behaviour. For example, a comparison of prisoners with other less antisocial youth.

4.6. Conclusion

This research has shown that there is a strong presence of learning disabilities amongst youth incarcerated in two New Zealand prisons. Within New Zealand, little attention has been paid to the outcomes for youth with learning disabilities. This current study has attempted to provide information on one possible trajectory that youth with learning disabilities have embarked on. An attempt has also been made to determine other factors that make this trajectory more probable. This current study provides a foundation from which to explore the needs of individuals with learning

disabilities, in both preventative treatments, before they begin the journey towards delinquency, and once identified within the prison system.

The literature review for this present study highlights the magnitude of the research on learning disabilities that documents the academic difficulties, maladaptive behaviours and skill deficits that occurs in this population. Yet little is known or understood about the causal mechanisms that lead to these impairing difficulties. Until this foundation is firmly established, we cannot attempt to explain the more complicated correlates that occur in conjunction with learning disabilities, such as delinquency and offending behaviour.

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Appendix A: Conners' Rating Scale Adolescent Versions

Conners-Wells' Self-Report Scale (L)

by C. Keith Conners, Ph.D. and Karen Wells, Ph.D.

Name:_____ Gender: M F (Circle One)

Birthdate:____/____/____ (Month Day Year) Age:_____ School Grade:_____ Today's Date:____/____/____ (Month Day Year)

Instructions: For the items below, circle the number that indicates whether the item is Not At All, Just a Little, Pretty Much, or Very Much True for you. "Not at all" means that the item is *seldom or never* a problem. "Very Much" means that the item is *very often a problem* or occurs *very frequently*. "Just a Little" and "Pretty Much" are in between. Please respond to all the items.

	NOT TRUE AT ALL (Never, Seldom)	JUST A LITTLE TRUE (Occasionally)	PRETTY MUCH TRUE (Often, Quite a Bit)	VERY MUCH TRUE (Very Often, Very Frequent)
1. My parents' discipline is too harsh	0	1	2	3
2. I feel like crying	0	1	2	3
3. I bend the rules whenever I can	0	1	2	3
4. I tend to learn more slowly than I would like to	0	1	2	3
5. I am easily set off	0	1	2	3
6. I cannot sit still for very long	0	1	2	3
7. My parents only notice my bad behavior	0	1	2	3
8. I make careless mistakes or have trouble paying close attention to details	0	1	2	3
9. Punishment in our house is not fair	0	1	2	3
10. I am discouraged	0	1	2	3
11. I have trouble keeping my attention focused when playing or working	0	1	2	3
12. I get into trouble with the police	0	1	2	3
13. I have trouble organizing my schoolwork	0	1	2	3
14. I tend to explode easily	0	1	2	3
15. I have too much energy to sit still for long	0	1	2	3
16. My parents do not reward or notice my good behavior	0	1	2	3
17. I have trouble listening to what people say to me	0	1	2	3
18. My parents are too strict	0	1	2	3
19. I feel sad and gloomy	0	1	2	3
20. I have trouble finishing my schoolwork or chores	0	1	2	3
21. I break rules	0	1	2	3
22. I forget things that I have learned	0	1	2	3
23. I have a hot temper	0	1	2	3
24. I tend to squirm and fidget	0	1	2	3
25. My parents expect too much from me	0	1	2	3
26. I have problems organizing my tasks and activities	0	1	2	3
27. It seems like my parents are always criticizing me	0	1	2	3
28. I worry a lot about little things	0	1	2	3
29. I like to hurt some people	0	1	2	3
30. It takes a lot of effort to get my schoolwork done	0	1	2	3
31. I lose my temper	0	1	2	3
32. I feel restless inside even if I am sitting still	0	1	2	3
33. Noises tend to put me off track when I am studying	0	1	2	3
34. I don't like schoolwork or homework where I have to think a lot	0	1	2	3
35. There is a lot of yelling in our house	0	1	2	3
36. A lot of things scare me even if I would not admit it to others	0	1	2	3
37. I have urges to do really bad things	0	1	2	3
38. Sticking with things for more than a few minutes is difficult	0	1	2	3
39. My temper gets me into trouble	0	1	2	3

Items continued on back page...

Conners-Wells' Self-Report Scale (L)

by C. Keith Conners, Ph.D. and Karen Wells, Ph.D.

	NOT TRUE AT ALL (Never, Seldom)	JUST A LITTLE TRUE (Occasionally)	PRETTY MUCH TRUE (Often, Quite a Bit)	VERY MUCH TRUE (Very Often, Very Frequent)
40. I have to get up and move around during homework	0	1	2	3
41. I do not have good judgment about a lot of things	0	1	2	3
42. I lose things necessary for tasks or activities (e.g., school assignments, pencils, books, or tools)	0	1	2	3
43. The rules in our house are not very clear	0	1	2	3
44. I act okay on the outside, but inside I am unsure of myself	0	1	2	3
45. I destroy property that belongs to others	0	1	2	3
46. I have trouble keeping my thoughts organized	0	1	2	3
47. A lot of things irritate me	0	1	2	3
48. I have trouble sitting still through a meal	0	1	2	3
49. I have trouble playing or doing leisure activities quietly	0	1	2	3
50. I am distracted when things are going on around me	0	1	2	3
51. My family does not do many fun things together	0	1	2	3
52. I am afraid to be alone	0	1	2	3
53. I am forgetful in my daily activities	0	1	2	3
54. I like to do dangerous things	0	1	2	3
55. I lose track of what I am supposed to do	0	1	2	3
56. People bug me and get me angry	0	1	2	3
57. I fidget (with my hands or feet) or squirm in my seat	0	1	2	3
58. I like to be on the go rather than being in one place	0	1	2	3
59. I am behind in my studies	0	1	2	3
60. I leave my seat when I am not supposed to (e.g., in school)	0	1	2	3
61. I am not very close to my family	0	1	2	3
62. I get nervous	0	1	2	3
63. I am restless or overactive	0	1	2	3
64. I am truant from school (i.e., stayed out of school without permission)	0	1	2	3
65. I have trouble concentrating on one thing at a time	0	1	2	3
66. I still throw tantrums	0	1	2	3
67. I am a lonely person	0	1	2	3
68. Sometimes I feel like I am driven by a motor	0	1	2	3
69. I am touchy or easily annoyed	0	1	2	3
70. I am always on the go	0	1	2	3
71. My parents do not really care about me	0	1	2	3
72. The future seems hopeless to me	0	1	2	3
73. I take things that do not belong to me	0	1	2	3
74. I am very disorganized when it comes to homework	0	1	2	3
75. I talk too much	0	1	2	3
76. I have a lot of aches and pains	0	1	2	3
77. I drink alcoholic beverages	0	1	2	3
78. I read slowly and with a lot of effort	0	1	2	3
79. I give answers to questions before the questions have been completed	0	1	2	3
80. I take drugs	0	1	2	3
81. I have trouble with reading and spelling	0	1	2	3
82. I have trouble waiting in line or taking turns with others	0	1	2	3
83. My handwriting is poor	0	1	2	3
84. I lose my place when I am reading	0	1	2	3
85. I am easily lead into trouble	0	1	2	3
86. I interrupt others when they are working or playing	0	1	2	3
87. I have nightmares	0	1	2	3

Conners' Parent Rating Scale - Revised (L)

by C. Keith Conners, Ph.D.

Child's Name:_____ Gender: M F (Circle One)

Birthdate:____/____/____ (Month Day Year) Age:_____ School Grade:_____

Parent's Name:_____ Today's Date:____/____/____ (Month Day Year)

Instructions: Below are a number of common problems that children have. Please rate each item according to your child's behavior in the last month. For each item, ask yourself "How much of a problem has this been in the last month?", and circle the best answer for each one. If none, not at all, seldom, or very infrequently, you would circle 0. If very much true, or it occurs very often or frequently, you would circle 3. You would circle 1 or 2 for ratings in between. Please respond to all the items.

	NOT TRUE AT ALL (Never, Seldom)	JUST A LITTLE TRUE (Occasionally)	PRETTY MUCH TRUE (Often, Quite a Bit)	VERY MUCH TRUE (Very Often, Very Frequent
1. Angry and resentful	0	1	2	3
2. Difficulty doing or completing homework	0	1	2	3
3. Is always "on the go" or acts as if driven by a motor	0	1	2	3
4. Timid, easily frightened	0	1	2	3
5. Everything must be just so	0	1	2	3
6. Has no friends	0	1	2	3
7. Stomach aches	0	1	2	3
8. Fights	0	1	2	3
9. Avoids, expresses reluctance about, or has difficulties engaging in tasks that require sustained mental effort (such as schoolwork or homework)	0	1	2	3
10. Has difficulty sustaining attention in tasks or play activities	0	1	2	3
11. Argues with adults	0	1	2	3
12. Fails to complete assignments	0	1	2	3
13. Hard to control in malls or while grocery shopping	0	1	2	3
14. Afraid of people	0	1	2	3
15. Keeps checking things over again and again	0	1	2	3
16. Loses friends quickly	0	1	2	3
17. Aches and pains	0	1	2	3
18. Restless or overactive	0	1	2	3
19. Has trouble concentrating in class	0	1	2	3
20. Does not seem to listen to what is being said to him/her	0	1	2	3
21. Loses temper	0	1	2	3
22. Needs close supervision to get through assignments	0	1	2	3
23. Runs about or climbs excessively in situations where it is inappropriate	0	1	2	3
24. Afraid of new situations	0	1	2	3
25. Fussy about cleanliness	0	1	2	3
26. Does not know how to make friends	0	1	2	3
27. Gets aches and pains or stomachaches before school	0	1	2	3
28. Excitable, impulsive	0	1	2	3
29. Does not follow through on instructions and fails to finish schoolwork, chores or duties in the workplace (not due to oppositional behavior or failure to understand instructions)	0	1	2	3
30. Has difficulty organizing tasks and activities	0	1	2	3
31. Irritable	0	1	2	3
32. Restless in the "squirmy sense"	0	1	2	3
33. Afraid of being alone	0	1	2	3
34. Things must be done the same way every time	0	1	2	3
35. Does not get invited over to friends' houses	0	1	2	3
36. Headaches	0	1	2	3
37. Fails to finish things he/she starts	0	1	2	3

Items continued on back page...

Conners' Parent Rating Scale - Revised (L)

by C. Keith Conners, Ph.D.

	NOT TRUE AT ALL (Never, Seldom)	JUST A LITTLE TRUE (Occasionally)	PRETTY MUCH TRUE (Often, Quite a Bit)	VERY MU TRUE (Very Oft Very Frequ
38. Inattentive, easily distracted	0	1	2	3
39. Talks excessively	0	1	2	3
40. Actively defies or refuses to comply with adults' requests	0	1	2	3
41. Fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities	0	1	2	3
42. Has difficulty waiting in lines or awaiting turn in games or group situations	0	1	2	3
43. Has a lot of fears	0	1	2	3
44. Has rituals that he/she must go through	0	1	2	3
45. Distractibility or attention span a problem	0	1	2	3
46. Complains about being sick even when nothing is wrong	0	1	2	3
47. Temper outbursts	0	1	2	3
48. Gets distracted when given instructions to do something	0	1	2	3
49. Interrupts or intrudes on others (e.g., butts into others' conversations or games)	0	1	2	3
50. Forgetful in daily activities	0	1	2	3
51. Cannot grasp arithmetic	0	1	2	3
52. Will run around between mouthfuls at meals	0	1	2	3
53. Afraid of the dark, animals, or bugs	0	1	2	3
54. Sets very high goals for self	0	1	2	3
55. Fidgets with hands or feet or squirms in seat	0	1	2	3
56. Short attention span	0	1	2	3
57. Touchy or easily annoyed by others	0	1	2	3
58. Has sloppy handwriting	0	1	2	3
59. Has difficulty playing or engaging in leisure activities quietly	0	1	2	3
60. Shy, withdrawn	0	1	2	3
61. Blames others for his/her mistakes or misbehavior	0	1	2	3
62. Fidgeting	0	1	2	3
63. Messy or disorganized at home or school	0	1	2	3
64. Gets upset if someone rearranges his/her things	0	1	2	3
65. Clings to parents or other adults	0	1	2	3
66. Disturbs other children	0	1	2	3
67. Deliberately does things that annoy other people	0	1	2	3
68. Demands must be met immediately — easily frustrated	0	1	2	3
69. Only attends if it is something he/she is very interested in	0	1	2	3
70. Spiteful or vindictive	0	1	2	3
71. Loses things necessary for tasks or activities (e.g., school assignments, pencils, books, tools or toys)	0	1	2	3
72. Feels inferior to others	0	1	2	3
73. Seems tired or slowed down all the time	0	1	2	3
74. Spelling is poor	0	1	2	3
75. Cries often and easily	0	1	2	3
76. Leaves seat in classroom or in other situations in which remaining seated is expected	0	1	2	3
77. Mood changes quickly and drastically	0	1	2	3
78. Easily frustrated in efforts	0	1	2	3
79. Easily distracted by extraneous stimuli	0	1	2	3
80. Blurts out answers to questions before the questions have been completed	0	1	2	3

Conners' Teacher Rating Scale - Revised (L)

by C. Keith Conners, Ph.D.

Student's Name:_____ **Gender:** M F (Circle One)

Birthdate:____/____/____ (Month / Day / Year) **Age:**_____ **School Grade:**_____

Teacher's Name:_____ **Today's Date:**____/____/____ (Month / Day / Year)

Instructions: Below are a number of common problems that children have in school. Please rate each item according to how much of a problem it has been in the last month. For each item, ask yourself "How much of a problem has this been in the last month?", and circle the best answer for each one. If none, not at all, seldom, or very infrequently, you would circle 0. If very much true, or it occurs very often or frequently, you would circle 3. You would circle 1 or 2 for ratings in between. Please respond to all the items.

	NOT TRUE AT ALL (Never, Seldom)	JUST A LITTLE TRUE (Occasionally)	PRETTY MUCH TRUE (Often, Quite a Bit)	VERY MUCH TRUE (Very Often, Very Frequent)
1. Defiant	0	1	2	3
2. Restless in the "squirmy" sense	0	1	2	3
3. Forgets things he/she has already learned	0	1	2	3
4. Appears to be unaccepted by group	0	1	2	3
5. Feelings easily hurt	0	1	2	3
6. Is a perfectionist	0	1	2	3
7. Temper outbursts; explosive, unpredictable behavior	0	1	2	3
8. Excitable, impulsive	0	1	2	3
9. Fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities	0	1	2	3
10. Sassy	0	1	2	3
11. Is always "on the go" or acts as if driven by a motor	0	1	2	3
12. Avoids, expresses reluctance about, or has difficulties engaging in tasks that require sustained mental effort (such as schoolwork or homework)	0	1	2	3
13. Is one of the last to be picked for teams or games	0	1	2	3
14. Is an emotional child	0	1	2	3
15. Everything must be just so	0	1	2	3
16. Restless or overactive	0	1	2	3
17. Fails to finish things he/she starts	0	1	2	3
18. Does not seem to listen to what is being said to him/her	0	1	2	3
19. Actively defies or refuses to comply with adults' requests	0	1	2	3
20. Leaves seat in classroom or in other situations in which remaining seated is expected	0	1	2	3
21. Poor in spelling	0	1	2	3
22. Has no friends	0	1	2	3
23. Timid, easily frightened	0	1	2	3
24. Keeps checking things over and over	0	1	2	3
25. Cries often and easily	0	1	2	3
26. Inattentive, easily distracted	0	1	2	3
27. Has difficulty organizing tasks or activities	0	1	2	3
28. Has difficulty sustaining attention in tasks or play activities	0	1	2	3
29. Has difficulty waiting his/her turn	0	1	2	3
30. Not reading up to par	0	1	2	3

Items continued on back page...

Conners' Teacher Rating Scale - Revised (L)

by C. Keith Conners, Ph.D.

	NOT TRUE AT ALL (Never, Seldom)	JUST A LITTLE TRUE (Occasionally)	PRETTY MUCH TRUE (Often, Quite a Bit)	VERY MUC TRUE (Very Often Very Freque
31. Does not know how to make friends	0	1	2	3
32. Sensitive to criticism	0	1	2	3
33. Seems over-focused on details	0	1	2	3
34. Fidgeting	0	1	2	3
35. Disturbs other children	0	1	2	3
36. Talks excessively	0	1	2	3
37. Argues with adults	0	1	2	3
38. Cannot remain still	0	1	2	3
39. Runs about or climbs excessively in situations where it is inappropriate	0	1	2	3
40. Lacks interest in schoolwork	0	1	2	3
41. Has poor social skills	0	1	2	3
42. Has difficulty playing or engaging in leisure activities quietly	0	1	2	3
43. Likes everything neat and clean	0	1	2	3
44. Fidgets with hands or feet or squirms in seat	0	1	2	3
45. Demands must be met immediately—easily frustrated	0	1	2	3
46. Blurts out answers to questions before the questions have been completed	0	1	2	3
47. Spiteful or vindictive	0	1	2	3
48. Short attention span	0	1	2	3
49. Loses things necessary for tasks or activities (e.g., school assignments, pencils, books, tools, or toys)	0	1	2	3
50. Only pays attention to things he/she is really interested in	0	1	2	3
51. Shy, withdrawn	0	1	2	3
52. Distractibility or attention span a problem	0	1	2	3
53. Things must be done the same way every time	0	1	2	3
54. Mood changes quickly and drastically	0	1	2	3
55. Interrupts or intrudes on others (e.g., butts into others' conversations or games)	0	1	2	3
56. Poor in arithmetic	0	1	2	3
57. Does not follow through on instructions and fails to finish schoolwork (not due to oppositional behavior or failure to understand instructions)	0	1	2	3
58. Easily distracted by extraneous stimuli	0	1	2	3
59. Restless, always up and on the go	0	1	2	3

Appendix B: Conners' Rating Scales Adult Versions

CAARS–Self-Report: Long Version (CAARS–S:L)

by C. K. Conners, Ph.D., D. Erhardt, Ph.D., & E. P. Sparrow, M.A.

Name:_____ Gender: M F
(Circle One)

Birthdate:____/____/____ Age:_____ Today's Date:____/____/____
Month Day Year Month Day Year

Instructions: Listed below are items concerning behaviors or problems sometimes experienced by adults. Read each item carefully and decide how much or how frequently each item describes you recently. Indicate your response for each item by circling the number that corresponds to your choice. Use the following scale: 0 = Not at all, never; 1 = Just a little, once in a while; 2 = Pretty much, often; and 3 = Very much, very frequently.

	Not at all, never	Just a little, once in a while	Pretty much, often	Very much, very frequently
1. I like to be doing active things.	0	1	2	3
2. I lose things necessary for tasks or activities (e.g., to-do lists, pencils, books, or tools).	0	1	2	3
3. I don't plan ahead.	0	1	2	3
4. I blurt out things.	0	1	2	3
5. I am a risk-taker or a daredevil.	0	1	2	3
6. I get down on myself.	0	1	2	3
7. I don't finish things I start.	0	1	2	3
8. I am easily frustrated.	0	1	2	3
9. I talk too much.	0	1	2	3
10. I am always on the go, as if driven by a motor.	0	1	2	3
11. I'm disorganized.	0	1	2	3
12. I say things without thinking.	0	1	2	3
13. It's hard for me to stay in one place very long.	0	1	2	3
14. I have trouble doing leisure activities quietly.	0	1	2	3
15. I'm not sure of myself.	0	1	2	3
16. It's hard for me to keep track of several things at once.	0	1	2	3
17. I'm always moving even when I should be still.	0	1	2	3
18. I forget to remember things.	0	1	2	3
19. I have a short fuse/hot temper.	0	1	2	3
20. I'm bored easily.	0	1	2	3
21. I leave my seat when I am not supposed to.	0	1	2	3
22. I have trouble waiting in line or taking turns with others.	0	1	2	3
23. I still throw tantrums.	0	1	2	3
24. I have trouble keeping my attention focused when working.	0	1	2	3
25. I seek out fast paced, exciting activities.	0	1	2	3
26. I avoid new challenges because I lack faith in my abilities.	0	1	2	3
27. I feel restless inside even if I am sitting still.	0	1	2	3
28. Things I hear or see distract me from what I'm doing.	0	1	2	3
29. I am forgetful in my daily activities.	0	1	2	3
30. Many things set me off easily.	0	1	2	3
31. I dislike quiet, introspective activities.	0	1	2	3
32. I lose things that I need.	0	1	2	3
33. I have trouble listening to what other people are saying.	0	1	2	3

Items continued on back page...

CAARS–Self-Report: Long Version (CAARS-S:L)

by C. K. Conners, Ph.D., D. Erhardt, Ph.D., & E. P. Sparrow, M.A.

	Not at all, never	Just a little, once in a while	Pretty much, often	Very much, very frequently
34. I am an underachiever.	0	1	2	3
35. I interrupt others when talking.	0	1	2	3
36. I change plans/jobs in midstream.	0	1	2	3
37. I act okay on the outside, but inside I'm unsure of myself.	0	1	2	3
38. I am always on the go.	0	1	2	3
39. I make comments/remarks that I wish I could take back.	0	1	2	3
40. I can't get things done unless there's an absolute deadline.	0	1	2	3
41. I fidget (with my hands or feet) or squirm in my seat.	0	1	2	3
42. I make careless mistakes or have trouble paying close attention to detail.	0	1	2	3
43. I step on people's toes without meaning to.	0	1	2	3
44. I have trouble getting started on a task.	0	1	2	3
45. I intrude on others' activities.	0	1	2	3
46. It takes a great deal of effort for me to sit still.	0	1	2	3
47. My moods are unpredictable.	0	1	2	3
48. I don't like homework or job activities where I have to think a lot.	0	1	2	3
49. I'm absent-minded in daily activities.	0	1	2	3
50. I am restless or overactive.	0	1	2	3
51. I depend on others to keep my life in order and attend to the details.	0	1	2	3
52. I annoy other people without meaning to.	0	1	2	3
53. Sometimes my attention narrows so much that I'm oblivious to everything else; other times it's so broad that everything distracts me.	0	1	2	3
54. I tend to squirm or fidget.	0	1	2	3
55. I can't keep my mind on something unless it's really interesting.	0	1	2	3
56. I wish I had greater confidence in my abilities.	0	1	2	3
57. I can't sit still for very long.	0	1	2	3
58. I give answers to questions before the questions have been completed.	0	1	2	3
59. I like to be up and on the go rather than being in one place.	0	1	2	3
60. I have trouble finishing job tasks or schoolwork.	0	1	2	3
61. I am irritable.	0	1	2	3
62. I interrupt others when they are working or playing.	0	1	2	3
63. My past failures make it hard for me to believe in myself.	0	1	2	3
64. I am distracted when things are going on around me.	0	1	2	3
65. I have problems organizing my tasks and activities.	0	1	2	3
66. I misjudge how long it takes to do something or go somewhere.	0	1	2	3

CAARS–Observer: Long Version (CAARS–O:L)

by C. K. Conners, Ph.D., D. Erhardt, Ph.D., & E. P. Sparrow, M.A.

Person Being Described	Observer
Name: _____	Your Name: _____
Gender: M F (Circle One) Age:_____	Gender: M F (Circle One) Age:_____
Today's Date:____/____/____ (Month Day Year)	I am this person's: ☐ spouse ☐ parent ☐ sibling ☐ other: _____

Instructions: Listed below are items concerning behaviors or problems sometimes experienced by adults. Read each item carefully and decide how much or how frequently each item describes this person recently. Indicate your response for each item by circling the number that corresponds to your choice. Use the following scale: 0 = Not at all, never; 1 = Just a little, once in a while; 2 = Pretty much, often; and 3 = Very much, very frequently.

The person being described...	Not at all, never	Just a little, once in a while	Pretty much, often	Very much, very frequently
1. likes to be doing active things.	0	1	2	3
2. loses things necessary for tasks or activities (e.g., to-do lists, pencils, books, or tools).	0	1	2	3
3. doesn't plan ahead.	0	1	2	3
4. blurts out things.	0	1	2	3
5. is a risk-taker or a daredevil.	0	1	2	3
6. gets down on self.	0	1	2	3
7. doesn't finish things.	0	1	2	3
8. is easily frustrated.	0	1	2	3
9. talks too much.	0	1	2	3
10. is always on the go, as if driven by a motor.	0	1	2	3
11. is disorganized.	0	1	2	3
12. says things without thinking.	0	1	2	3
13. has a hard time staying in one place very long.	0	1	2	3
14. gets rowdy or boisterous during leisure activities.	0	1	2	3
15. is not sure of self.	0	1	2	3
16. has a hard time keeping track of several things at once.	0	1	2	3
17. is always moving even when attempting to be still.	0	1	2	3
18. forgets to remember things.	0	1	2	3
19. has a short fuse/hot temper.	0	1	2	3
20. is bored easily.	0	1	2	3
21. leaves seat when not supposed to.	0	1	2	3
22. has trouble waiting in line or taking turns with others.	0	1	2	3
23. throws tantrums.	0	1	2	3
24. has trouble keeping attention focused when working or at leisure.	0	1	2	3
25. seeks out fast paced, exciting activities.	0	1	2	3
26. avoids new challenges because of lack of faith in his/her abilities.	0	1	2	3
27. appears to be restless inside even when sitting still.	0	1	2	3
28. is distracted by sights or sounds when trying to concentrate.	0	1	2	3
29. is forgetful in daily activities.	0	1	2	3
30. is set off easily by many things.	0	1	2	3
31. dislikes quiet, introspective activities.	0	1	2	3
32. loses things needed for work or tasks.	0	1	2	3
33. has trouble listening to what other people are saying.	0	1	2	3

Items continued on back page...

CAARS–Observer Scale (Long Version)

by C. Keith Conners, Ph.D., D. Erhardt, Ph.D., & E. P. Sparrow

	Not at all, never	Just a little, once in a while	Pretty much, often	Very much, very frequently
34. is an underachiever.	0	1	2	3
35. interrupts others when talking.	0	1	2	3
36. changes plans/jobs in midstream.	0	1	2	3
37. acts okay on the outside, but appears unsure of self.	0	1	2	3
38. is always on the go.	0	1	2	3
39. makes comments or remarks that are regretted later.	0	1	2	3
40. can't get things done unless there's an absolute deadline.	0	1	2	3
41. fidgets (with hands or feet) or squirms in seat.	0	1	2	3
42. makes careless mistakes or has trouble paying close attention to details.	0	1	2	3
43. steps on people's toes without meaning to.	0	1	2	3
44. has trouble getting started on a task.	0	1	2	3
45. intrudes on others' activities.	0	1	2	3
46. appears to exert a great deal of effort when trying to sit still.	0	1	2	3
47. has unpredictable moods.	0	1	2	3
48. doesn't like academic studies/work projects where effort at thinking a lot is required.	0	1	2	3
49. is absent-minded in daily activities.	0	1	2	3
50. is restless or overactive.	0	1	2	3
51. depends on others to keep life in order and attend to the details.	0	1	2	3
52. unintentionally annoys other people.	0	1	2	3
53. sometimes overfocuses on details, at other times appears distracted by everything going on around him/her.	0	1	2	3
54. tends to squirm or fidget.	0	1	2	3
55. can't keep his/her mind on something unless it's really interesting.	0	1	2	3
56. expresses lack of confidence in his/her abilities.	0	1	2	3
57. can't sit still for very long.	0	1	2	3
58. gives answers to questions before the questions have been completed.	0	1	2	3
59. likes to be up and on the go rather than being in one place.	0	1	2	3
60. has trouble finishing job tasks or schoolwork.	0	1	2	3
61. is irritable.	0	1	2	3
62. interrupts others when they are working or busy.	0	1	2	3
63. expresses lack of confidence in self because of past failures.	0	1	2	3
64. appears distracted when things are going on around him/her.	0	1	2	3
65. has problems organizing tasks and activities.	0	1	2	3
66. misjudges how long it takes to do something or go somewhere.	0	1	2	3

Appendix C: Brief Symptom Inventory

INSTRUCTIONS:
Below is a list of problems people sometimes have. Read each one carefully and fill in the circle on the separate answer sheet that best describes HOW MUCH THAT PROBLEM HAS DISTRESSED OR BOTHERED YOU DURING THE PAST 7 DAYS INCLUDING TODAY. Blacken the circle for only one number for each problem. Do not skip any items. If you change your mind, erase your first mark carefully and then fill in your new choice. Read the example before beginning. If you have any questions, please ask them now.

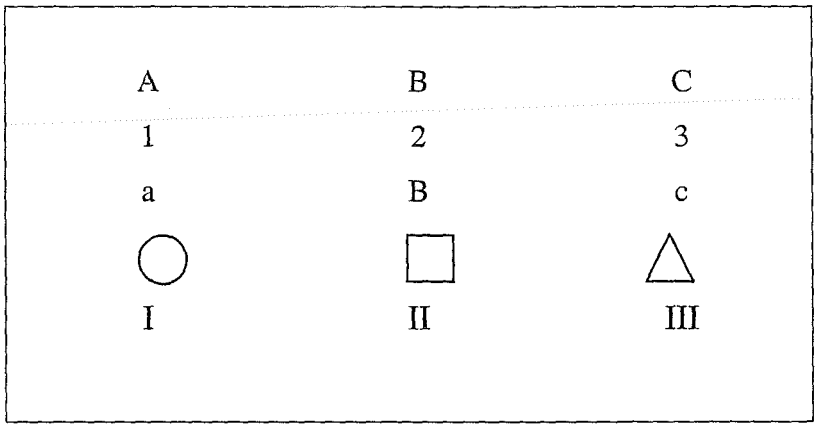
NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY	EXAMPLE HOW MUCH WERE YOU DISTRESSED BY:
⓪	①	②	●	④	Bodyaches

HOW MUCH WERE YOU DISTRESSED BY:

1. Nervousness or shakiness inside
2. Faintness or dizziness
3. The idea that someone else can control your thoughts
4. Feeling others are to blame for most of your troubles
5. Trouble remembering things
6. Feeling easily annoyed or irritated
7. Pains in heart or chest
8. Feeling afraid in open spaces or on the streets
9. Thoughts of ending your life
10. Feeling that most people cannot be trusted
11. Poor appetite
12. Suddenly scared for no reason
13. Temper outbursts that you could not control
14. Feeling lonely even when you are with people
15. Feeling blocked in getting things done
16. Feeling lonely
17. Feeling blue

18. Feeling no interest in things
19. Feeling fearful
20. Your feelings being easily hurt
21. Feeling that people are unfriendly or dislike you
22. Feeling inferior to others
23. Nausea or upset stomach
24. Feeling that you are watched or talked about by others
25. Trouble falling asleep
26. Having to check and double-check what you do
27. Difficulty making decisions
28. Feeling afraid to travel on buses, subways, or trains
29. Trouble getting your breath
30. Hot or cold spells
31. Having to avoid certain things, places, or activities because they frighten you
32. Your mind going blank
33. Numbness or tingling in parts of your body
34. The idea that you should be punished for your sins
35. Feeling hopeless about the future
36. Trouble concentrating
37. Feeling weak in parts of your body
38. Feeling tense or keyed up
39. Thoughts of death or dying
40. Having urges to beat, injure, or harm someone
41. Having urges to break or smash things
42. Feeling very self-conscious with others
43. Feeling uneasy in crowds, such as shopping or at a movie
44. Never feeling close to another person
45. Spells of terror or panic
46. Getting into frequent arguments
47. Feeling nervous when you are left alone
48. Others not giving you proper credit for your achievements
49. Feeling so restless you couldn't sit still
50. Feelings of worthlessness
51. Feeling that people will take advantage of you if you let them
52. Feelings of guilt
53. The idea that something is wrong with your mind

Appendix D: Rey Fifteen Item Memory Test



Appendix E: History Questionnaire

HISTORY QUESTIONNAIRE

Child's Name: _____ Date of Birth: _____
Date Completed: _____ completed by: _____
Relationship to participant: _____ Marital status of parent: _____

The purpose of this questionnaire is to obtain some background information on your child. The information you provide is confidential and will only be used for research purposes.

1. Please indicate which of the following ethnic groups you belong to (you may tick more than one).

_____ NZ European/Pakeha
_____ NZ Maori
_____ Samoan
_____ Tongan
_____ Niuean
_____ Chinese
_____ Indian
_____ Other (please specify: _____)

2. Please indicate which of the following ethnic groups your child belongs to (you may tick more than one).

_____ NZ European/Pakeha
_____ NZ Maori
_____ Samoan
_____ Tongan
_____ Niuean
_____ Chinese
_____ Indian
_____ Other (please specify: _____)

3. Please indicate your highest educational qualification using the list below:

_____ No school certificate
_____ School certificate in one or more subjects
_____ Sixth form certificate or university entrance in one or more subjects
_____ University Bursary or Scholarship
_____ Overseas qualification
_____ Post-secondary (e.g., diploma, trade certificate)
_____ University degree
_____ Other qualification

4. Please indicate your partner's (if applicable) highest educational qualification using the list below:

_____ No school certificate
_____ School certificate in one or more subjects
_____ Sixth form certificate or university entrance in one or more subjects
_____ University Bursary or Scholarship
_____ Overseas qualification
_____ Post-secondary (e.g., diploma, trade certificate)
_____ University degree
_____ Other qualification

5. What is your occupation? _____

6. What is your partner's occupation (if applicable)? _____

7. Please indicate which of the following best describes your total household income before tax (include income from all sources):

_____ less than $20,000
_____ $20,000 to $40,000
_____ more than $40,000

8. Has your child ever been in contact with any social agency, psychologist, psychiatrist, or private agency? YES NO

9. If **YES**, please list:

Dates of service	Name of professional	Reason for visit
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

10. At what age did your child first take 5 steps without any help?

Less than one year (1-12 months)
1-1 ½ years (13-18 months)
1 ½ - 2 years (19-24 months)
More than two years (24+ months)
Don't know

11. At what age was your child able to put at least three words together in a phrase?

Less than two years (1-24 months)
2-2 ½ years (25-30 months)
2 ½ - 3 years (31-36 months)
More than three years (36+ months)
Don't know

12. Did you ever worry that your child was slow to develop in any way? YES NO

13. Did anyone else ever think that your child was slow to develop? YES NO

14. The following is a list of problems that some mothers experience during pregnancy. For each one, please indicate whether there were any of the following problems:

a) Bleeding YES NO
b) High blood pressure YES NO
c) Convulsions, seizures YES NO
d) Infections YES NO
e) Severe nausea/vomiting YES NO

15. Were any of the following substances used during pregnancy?

a) Medicine other than vitamins YES NO
b) Cigarettes YES NO
c) Alcohol/drug use YES NO

16. Was the mother under severe emotional stress? YES NO

17. Was your child born on time? YES NO

18. At the time of the delivery, were there any problems like:

a) Emergency Caesarian section YES NO
b) Planned Caesarian section YES NO
c) Breech or "bum" first delivery YES NO
d) Forceps needed YES NO
e) Baby jaundiced or yellow YES NO
f) Baby didn't breathe properly YES NO
g) Baby needed an incubator YES NO

19. Has your child ever had a head injury with loss of consciousness? YES NO

20. Has your child ever had ear infections? YES NO

21. The following is a list of health problems or conditions that some children have. For each one, please indicate whether your child presently has it:

a) Asthma YES NO
b) Hay fever or other allergy YES NO
c) A heart problem YES NO
d) Epilepsy/convulsions/seizures YES NO
e) Cerebral palsy YES NO
f) Diabetes YES NO
g) Mental retardation YES NO
h) Developmental delay or lag YES NO
i) Difficulties with coordination YES NO

22. Has your child ever had any learning problems? YES NO

23. Is your child currently being prescribed any medications? YES NO

If **YES**, what are the medications being prescribed (please list):

_____
_____
_____

24. Did anyone in the family (parents, grandparents, aunts, uncles, cousins, etc.) have:

Anxiety disorder	YES	NO	Who?	_____
Major depression	YES	NO	Who?	_____
Dysthymia	YES	NO	Who?	_____
Bipolar disorder (manic-depressed)	YES	NO	Who?	_____
Psychotic disorder (schizophrenia)	YES	NO	Who?	_____
Behavioral problems (e.g., ADHD)	YES	NO	Who?	_____
Problems with drugs or alcohol	YES	NO	Who?	_____
Learning problems	YES	NO	Who?	_____

Appendix F: ITAC – Risk Screen for Youth Offenders

RISK SCREEN FOR YOUTH OFFENDERS

Itac-24

question set for young men aged 14 to 18 years

The Risk Screen for Youth Offenders is designed to help you make decisions about the management of young male offenders between the ages of 14 and 18 years, inclusive. It combines answers given by the young person with answers from a "significant other" - someone who knew the youth well as a child. This information is then used to reconstruct the behavioral history of the youth offender, which gives you two pieces of important information. First, it identifies the 'behavioral trajectory' that the young person is following, and second it gives a total risk score, which indicates the probability of a further conviction in the following 12 months.

Introduction for significant other

Instructions and questions for the significant other are shown in the shaded boxes.

My name is [.....] and I work for [.....]. Right now I am doing an assessment of [name] who has been referred to me because ..... When I have finished my assessment [department] will decide how we can best help [name] to stay out of trouble in the future.

[name] has given me your name because you could help me to get a clear picture of his behaviour as a child and teenager. It is important for me to get a really accurate picture of how his behaviour has been developing since childhood for my assessment. If I have really accurate information about his behaviour I can make a better decision about what help he needs to stay out of trouble in future. You do not have to answer these questions if you do not want to. They will take about 20 minutes, and you can answer them over the phone. Will you help me with this? And is this a convenient time?

Before we start I need to emphasise that I am not collecting evidence to get [name] into trouble. I am looking for really accurate information that will help us to keep him out of trouble in the future. The information you give me is confidential.

Introduction for Offender:

Instructions and questions for the offender are shown in the un-shaded boxes.

My name is [.....] and I work for [.....]. I am going to ask you some questions about your behaviour during your childhood and teenage years. These questions are part of an assessment that will give me the information I need to make decisions about what I can do to help you stay out of trouble with the police in future. To do this I need to understand how your behaviour has been developing since you were a child, and your pattern of offending up until now. You can help me by giving honest and accurate answers to my questions.

Before we start I need to emphasise that I am not collecting evidence to charge you with more offences. This is about getting really accurate information about your behaviour so we can decide how to help you to stay out of trouble with the police in future.

	Scale 1	Scale 2	Scale 3	Scale 4
Question 1 (for significant other) Has [.....] been involved with the youth justice system before? If yes, how many Family Group Conferences have been organised because of his offending? Scoring • None 0 • 3 or less 1 • 4 or more 3 If there was at least one Family Group Conference, was the first one before the age of 14 years? Scoring • No 0 • Yes 2 SCORE OUT OF 5			☐	
Question 2 (for young offender) Have you been involved with the youth justice system before? If yes, how many Family Group Conferences have been organised because of your offending? Scoring • Does not agree with answer to Q1 0 • Agrees with answer to Q1 1 SCORE OUT OF 1	☐			
Question 3 (for significant other) Did [.....] ever run away from home and stay out one night or more? Scoring • No 0 • Once or twice 1 • More than twice 3 SCORE OUT OF 3			☐	
Question 4 (for young offender) Did you ever run away from home and stay out one night or more? Scoring • Does not agree with answer to Q3 0 • Agrees with answer to Q3 1 SCORE OUT OF 1	☐			

	Scale 1	Scale 2	Scale 3	Scale 4
Question 5 (for significant other) As a child, did [name] ever steal money or other valuables from home? [YES or NO is all that is needed] **Scoring** • Does not agree with answer to Q6 0 • Agrees with answer to Q6 1 SCORE OUT OF 1	☐			
Question 6 (for young offender) As a child, did you ever steal money or other valuables from home? **Scoring** • Never 0 • Occasionally (less than once a month) 1 • Frequently 3 SCORE OUT OF 3		☐		
Question 7 (for significant other) Was [name] ever permanently excluded from a school? (not allowed to return?). If yes, at what age did this first happen? **Scoring** • Never expelled 0 • Expelled first after age 14 years 1 • Expelled first at 14 years or before 3 SCORE OUT OF 3				☐
Question 8 (for young offender) Were you ever permanently excluded from a school? (not allowed to return?) **Scoring** • Does not agree with answer to Q7 0 • Agrees with answer to Q7 1 SCORE OUT OF 1	☐			
Question 9 (for young offender) Have you ever been brought before an adult court, like a district court or a high court? (not a youth court) If yes, at what age were you brought before an adult court for the first time? **Scoring** • Never 0 • 17 years or above 1 • 15 or 16 years 3 • 14 years or below 5 SCORE OUT OF 5				☐

	Scale 1	Scale 2	Scale 3	Scale 4
Question 10 (for significant other) Has [name] ever been brought before an adult court, like a district court or a high court? (not a youth court) Scoring • Does not agree with answer to Q9 0 • Agrees with answer to Q9 1 SCORE OUT OF 1	☐			
Question 11 (for young offender) Think about the people who have been your good friends during the last year. How many are there? (No names needed.) Record number ..... How many of those have been in trouble with the police during the last year? Record number ..... Scoring • No friends in trouble with Police 0 • Less than one quarter 1 • One quarter or more 3 Are you or any of your good friends patch-wearing gang members? Scoring • No 0 • Yes 2 SCORE OUT OF 5				☐
Question 12 (for significant other) Is [name] or any of his friends a patch-wearing gang member? Scoring • Does not agree with answer to Q12 0 • Agrees with answer to Q12 1 SCORE OUT OF 1	☐			
Question 13 (for young offender) During your primary or secondary school years, did you ever stop going to school (truant) for more than one day? Scoring • Never truant 0 • Truant on one or two occasions 1 • More than twice 3 If 'more than twice' how old were you when that happened for the first time? Scoring • 13 years or older 0 • Before 13 years 2 SCORE OUT OF 5			☐	

	Scale 1	Scale 2	Scale 3	Scale 4
More instructions for significant other. I would like to ask you some questions about what [.....] was like when he was at primary school and before that age. Remember that we need accurate and honest information so that we can help [.....] to stay out of trouble in the future.				
Question 14 (for significant other) Children sometimes do dangerous things because they do not stop to think about the consequences. How often did [name] behave like this? (Looking for impulsivity) Scoring • No more than other kids 0 • Sometimes, but not often 1 • Often, that's how he was 3 SCORE OUT OF 3		☐		
Question 15 (for significant other) During [name's] childhood, was he a very active boy – always on the go like he was driven by a motor? Scoring • No more than other kids 0 • Some problems with hyperactivity 1 • Often – it was characteristic behaviour 3 SCORE OUT OF 3		☐		
Question 16 (for significant other) At primary school age, was [name] a good liar? Scoring • No more than other kids 0 • Occasionally 1 • Lied often and skilfully 3 SCORE OUT OF 3		☐		
Question 17 (for significant other) When he was at primary school, did [name's] teacher ever speak to you about problems with [name's] behaviour at school? Scoring • Never happened 0 • Once or twice 1 • More than twice 3 If answer is "more than twice", did that conversation happen for the first time before [name] reached 10 years of age? Scoring • No, or don't remember 0 • Yes 2 SCORE OUT OF 5		☐		

	Scale 1	Scale 2	Scale 3	Scale 4
Question 18 (for significant other) Some children argue with adults and refuse to do as they are asked. (Un-cooperative and defiant) Was [name] like that as a primary school child? Scoring • No more than other kids 0 • Occasionally 1 • Often – that's how he was 3 SCORE OUT OF 3				
Question 19 (for significant other) At primary school age did [name] get into trouble a lot for breaking rules? Scoring • No more than other kids 0 • Sometimes, but not often 2 • Often, that's how he was 4 SCORE OUT OF 4		☐		
Question 20 (for young offender) How old were you the first time you got put into a police car because you had been picked up for something? Scoring • Never been put in police car 0 • At age 14 or above 1 • Between 11 and 13, inclusive 3 • 10 years or below 5 SCORE OUT OF 5			☐	
Question 21 (for young offender) How old were you when you started using drugs whenever you could get some? Scoring • Never used drugs 0 • At age 15 or above 1 • 14 years and below 3 SCORE OUT OF 3			☐	
Question 22 (for young offender) When you were of school age, did you ever steal stuff from shops or supermarkets? Scoring • Never stole from shops 0 • Occasionally, but not regularly 1 • Regularly -once a month or more 3 SCORE OUT OF 3			☐	

	Scale 1	Scale 2	Scale 3	Scale 4
Question 23: Self-reported offending (for young offender) I would like you to count up in your head the number of offences you have done in the last year, and tell me the number. Scoring • 1 or 2 — 0 • 3 or 4 — 1 • 5 to 7 — 2 • 8 to11 — 3 • 12 or more — 4 I would like you to think of the most serious offence you did during the last year and tell me about it. Scoring • Driving, used drugs or alcohol — 0 • Property offences only — 1 • Harmed person or sold drugs — 2 SCORE OUT OF 6				☐
Question 24: Drug and alcohol use profile (for young offender) On how many days during the last week did you drink some kind of alcohol? ..... How many standard drinks do you have on a standard drinking day? ..... 4 days or fewer / 5 days or more 5 drinks or less: 0 / 2 6 drinks or more: 1 / 3 How often have you used during the last month? ..... What kinds of drugs were they? ..... Less than 4 occasions / Four or more occasions Pot only: 0 / 1 Any other drug: 2 / 2 SCORE OUT OF 5				☐

	Scale 1 total	Scale 2 total	Scale 3 total	Scale 4 total
Total up the scores in each column and record totals in the boxes. Then transfer scores to the scales below.				

summary information remove and file this page

Case no..... Date..... Age.....

Client name.....

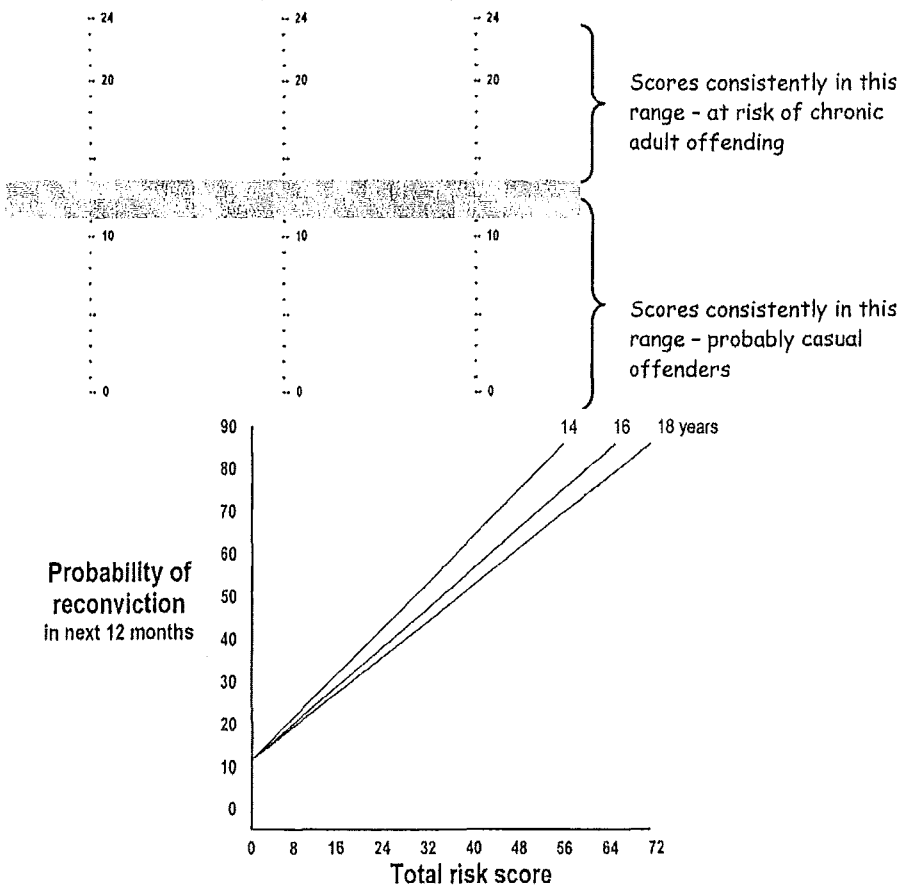
Assessor .....

Significant other .....

Decision .....

Total risk score =

SCALE ONE SCORE	
6	Good
5	Adequate
4	
3	
2	Poor - get more
1	
0	



Appendix G: Youth Information Sheet

Information Sheet

You have been selected to be involved in research that may help you and other young offenders. The purpose of this research is to understand how many young offenders have learning disabilities, if they do have some, what type of learning difficulties they have and how this may relate to reoffending.

Who will see the information?

The researcher (Paula Bateup) and her supervisor (Dr Julia Rucklidge) and staff from Department of Corrections Psychological Services will see the results of your testing, no one else will have access to this information. Your name will not be on the test, so no one apart from us will be able to identify you.

If you give your consent, a summary of the findings will be given to your case co-ordinator to ensure that they work with you to ensure you get help to improve any skills that may need a bit of help. You will also be given a copy of this report, for your information.

We are very careful when dealing with personal information and will keep all information that you tell us concerning yourself and your family in a file which will be kept locked at all times. In this study the information collected from you will remain anonymous and confidential, your name will not be mentioned without your prior consent. The information will not be stored with your name on it – a code will be assigned to ensure there is no identifying information. Confidentiality will be respected and no information that discloses the identity of participants will be released or published without consent.

If we are concerned about your safety or the safety of others, we may decide to breach confidentiality.

Who else will be involved?

A parent or somebody who knew you well when you were younger will be asked to tell us about what you were like when you were growing up. We will ask things about your behaviour, and your development over this time. We need you to tell us who to contact, and we will not contact this person without your permission.

What if I later decide I don't want to be involved?

If you decide you do not wish to participate in this research, you can withdraw from it at any time – that includes any information you have provided.

Will it hurt?

NO! The testing involves tasks that require you to answer some questions about yourself, your history and your behaviour. You will also be asked to do some tasks that involve making things, reading, writing, doing maths etc. Sometimes people feel a bit stressed doing these tasks, but you'll have breaks to ensure you feel relaxed. We can stop the testing at anytime that you are uncomfortable.

What is this for?

This project is being carried out as a requirement for a Masters Degree by Paula Bateup under the supervision of Dr Julia Rucklidge. We will be happy to discuss any concerns you may have about participation in the project. You are welcome to contact me, Paula Bateup 364-2987 ext 7191 or Dr Julia Rucklidge, supervisor, 364-2987 ext 7959 if you have any questions or concerns about this research. This research has been approved by the University Human Ethics Committee.

Appendix H: Youth Consent Form

Consent Form - Youth

Title of Research Project:

Prevalence of learning disabilities and risk of re-offending among young offenders in youth prisons

PLEASE READ AND SIGN...

I have read and understood the description of the above-named project. I have had the opportunity to discuss the study with the researcher, and I feel that my questions were answered. On this basis I agree to participate as a subject in the project, and I consent to publication of the results of the project with the understanding that anonymity will be preserved.

I understand also that I may contact the researcher at any time and withdraw from the project, including withdrawal of any information I have provided.

I understand that to fulfil the requirements of the study, somebody who knows me well when I was younger will be contacted. I give consent for the following person to be contacted to enable information on by past behaviour to be collected.

(Please tick) □ I give permission for the following person to be contacted, to allow information on my past behaviour to be collected.

(Please tick) □ I give permission for the results of my testing to be discussed with my case worker.

(Please tick) □ I consent to be contacted in the future about this and other research studies.

Name of Contact Person: _____

Relationship with this person: _____

Contact Details: _____

Telephone Number:

Home: Work:

Address:

_____

Name (please print): _____

Signature: _____

Date: _____

Appendix I: Parent Information Letter

(Name)
(Address)
(City)

(Date)

Dear (Name)

Your child (Name) has been selected to be involved in research undertaken as a requirement for a Masters Degree in conjunction with the Department of Corrections. The purpose of this research is to understand how many young offenders have learning disabilities, if they do have some, what type of learning difficulties they have and how this may relate to reoffending.

This research will look at the results from a number of youth throughout the country. In this study the information collected from you and your child will remain anonymous and confidential, your name will not be mentioned, without your prior consent. Any information you provide will be stored without any identifying information on it, and will be locked in a secure area.

The researcher, Paula Bateup, her supervisor, Dr Julia Rucklidge and staff Department of Corrections Psychological Services will see the results of your testing, no one else will have access to this information. Your name will not be on the information you provide us, so no one apart from us will be able to identify you. We are very careful when dealing with personal information and will keep all information that you tell us concerning yourself and your child in a file which will be kept locked at all times. The information will not be stored with your name on it – a code will be assigned to ensure there is no identifying information. Confidentiality will be respected and no information that discloses the identity of participants will be released or published without consent.

If you decide you do not wish to participate in this research, you can withdraw from it at any time – that includes any information you have provided.

The testing involves tasks that require your child and yourself to answer some questions about the child's history and his past behaviour. Your child will also be asked to do some tasks that involve making things, reading, writing, doing maths etc.

This project is being carried out as a requirement for a Masters Degree by Paula Bateup under the supervision of Dr Julia Rucklidge. We will be happy to discuss any concerns you may have about participation in the project. You are welcome to contact me, Paula Bateup 364-2987 ext 7197 or Dr Julia Rucklidge, supervisor, 364-2987 ext 7959 if you have any questions or concerns about this research. This research has been approved by the University Human Ethics Committee.

Yours sincerely

Paula Bateup
RESEARCHER

Appendix J: Generic Feedback Report

DEPARTMENT OF PSYCHOLOGY
UNIVERSITY OF CANTERBURY
RESEARCH ASSESSMENT SUMMARY REPORT

Name: x
Date of Birth: x
Date Seen: x

Background:

x, a year old male, finished school part way through Year . x participated in a research study examining young people's attention skills, behaviour and academic functioning conducted within Department of Psychology, University of Canterbury in consultation with Department of Corrections. As part of his participation, he completed a series of tests which included standardised measures of intellectual ability, and academic achievement.

Behavioral Observations:

x appeared to be shy, but keen to engage in testing. He was polite and rapport was established. His attention was focused throughout the testing, and he appeared motivated. There was times that x appeared anxious, but this decreased as the testing progressed. x worked hard on all tasks. Overall, the testing results appear to be a valid reflection of x's current level of functioning.

Overall Cognitive Functioning:

The Wechsler Adult Intelligence Scale - Third Edition (WAIS-III) was administered for research purposes only and therefore, only two of the subtests were given. On the subtest of Vocabulary, a test of general word knowledge, x fell in the range (percentile). On the subtest of Block Design, a task that assesses visual-spatial skills, analytical and problem-solving thinking, x fell in the range (percentile).

Academic Achievement:

x's levels of academic achievement in reading, spelling, arithmetic and phonological awareness were assessed using subtests from the Wechsler Individual Achievement Test (WIAT-II).

In terms of skills in reading single words, x was found to be at the percentile (Range). This means that his reading abilities are equal to Year of achievement. x's reading skills were further assessed with the pseudoword decoding subtest of the WIAT-II which requires the young person to read pseudowords. On this subtest he scored at the percentile (Range), or at approximately Year . x scored in the percentile (Range), or approximately Year , on the reading comprehension subtests, which measures the comprehension of short written stories. x was able to read sentences fluently aloud, but had difficulty applying context clues when decoding unknown words. He also had difficulty using phonetic decoding skills to decode unfamiliar words. His spelling abilities fell within the percentile (Range), equivalent to Year . x had difficulty with consonant letter cluster/sound relationships.

In mathematical computational skills, x was found to be at the percentile (Range), which is equivalent to Year . x was able to compute simple addition and subtraction, but had difficulties when multiple numbers were involved. He also had difficulty when working with fractions and decimals. In mathematical reasoning, x scored in the percentile (Range), or at approximately Year . x had difficulties using patterns, geometric and spatial reasoning to solve problems.

In terms of listening comprehension x was found to be in the percentile (Range) or equivalent to Year . x was able to understand sentence comprehension, but had difficulty with receptive vocabulary

and expressive vocabulary. On the oral expression subtest x scored in the percentile (Range) which is equivalent to Year or greater.

Please feel free to contact Paula Bateup at (03) 364-2987 ext 7191 or Julia Rucklidge at (03) 364 2987 ext 7959 for further clarification or concerns.

Paula Bateup
Student Clinical Psychologist
Principal Investigator

Julia Rucklidge, Ph.D., C.Psych.
Registered Psychologist
Supervisor

Appendix K: Classification of Offences

Police Code	Offence Type Committed by Youth Offenders (gained from file information)
Dishonesty Offences:	Driving Theft Burglary Receiving Stolen Property Break and Enter Obstruct/hinder police Disorderly behaviour Fighting in public
Drug and Anti-social Offences:	Drug Possession Drug Sale Offensive Behaviour
Violent Crime:	Aggravated Robbery Assault/grievous Bodily Harm Intimidation Murder Manslaughter Kidnapping Participates in criminal gang Threatening to kill Intent to injure Demands to steal Non aggravated robbery
Property Damage Offences:	Arson Wilful Damage Wilful sets fire
Property Abuse Offences:	Trespass Possess / Carry a Weapon Unlawfully in building Cruelty to animals
Administrative:	Fraud
Sexual Offences:	Rape Indecent assault > 16 years Sexual contact with a minor
Other:	Breech of sentence Resisting arrest Escape from an institution